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BIRD NOTES

from

40 Selborne Drive

Piedmont, California

1933 to 1939

by

Ernest I. Dyer

PART VI

January 1, 1937, to December 31, 1937 . . . . pp. 1333-1578

(first part of Dec. 31, 1936, is bound in Part V,

on p. 1332; last part of Dec. 31, 1937, is

bound in Part VII, on p. 1579)

Subject: mainly Thrashers, Road-runners

his back just like Rhody. Like Rhody, also, he seemed to ignore my presence while performing that operation. When he moved off after a few minutes it was without haste. He is "coming on".

I now went down to look for Rhody, who was not to be seen and did not respond to call, so I had to go into the brush to find him. He was in tree 9 and cried when I reached him. As mild punishment for his failure to respond to call, I gave him nothing and walked away, not inviting him to follow; but he did, without losing any time about it. Consequently I gave him food: meat first, then mouse. As it was nice and sunny there and I was on the sunny side of him, he immediately turned his back to me after finishing the mouse and opened up to the sun, thereafter ignoring me, yet I could easily have taken him by the tail without moving an inch.

As I drove by his roost after 5 P.M. he was there.
R5 had eaten his third live mouse of the day.

1937

January 1st. (Sunrise 7:25, sunset 5:01, clear).

A Good Omen — When I looked out of my bedroom window to the west at 7:45 A.M. there was a fine rainbow that lasted until 8:30, an unusually
A Rainbow. — long time. Only the southern end could be seen and this was double. In the three-quarters of an hour, during which I took colored motion pictures, the bow shifted toward the north 10 or 15 degrees, I estimated.

Thrashers singing. — Thrashers were singing down in the canyon.

An auspicious opening of the New Year!

R up at 10 A.M. — At 10 A.M. Rhody was sitting on his porch observant of all passing events. In a few minutes he sailed down to me for worms,
Wind on R's back while sunning. — sunning his back while catching them. A chilly breeze was coming from the south east passing over the higher, snow capped mountains of the inner Coast Range; as the sun was also in that quarter Rhody had to turn his back directly to the wind, which was strong enough to agitate his feathers, but he persisted in his pose. (Temp. in Clearing 52, in court 45). New storm approaching ?

R5 had already eaten his first mouse of the day--a freshly killed house-mouse.

At 12 he was shown a live mouse in a bright red card-board container 2½" in diameter and 4" long. He was not afraid of the red, apparently, as he stretched his neck to look down at the mouse much interested.

The mouse was put on a perch about 6' from the bird and less than 3' from my face. With little hesitation he came and took it without retreating. In trying to kill it, or in seizing it, the mouse in some way became affixed to his lower mandible--perhaps had taken hold of it. The bird dropped it to the ground, considered going after it but was afraid of me. The mouse was replaced and R5 again took it, partially killed it and swallowed it still kicking, the feathers on his neck agitated by the movements. This bird has much more trouble than Rhody in getting a mouse down--he is a smaller bird.

At 4:30, it was rather dark in the cage, he would not come down for a mouse.

Rhody had his mouse in the Clearing about 1:30. He was offered meat first, but would not take it.

After dark it was seen that he was in his regular roost. The anticipated storm had come, but he was not in his house.

January 2nd.

Rain in the night, strong north wind in the morning.

At 9:30 Rhody was not in his roost. A cold wind was sweeping over it. (40 in court. 45 in Clearing). He was not contacted during the forenoon.

By 9:30 R5 had had his first mouse, a live white one. At 11:30 I went in with another one. He came down as if to get it, but went right on by me in no special hurry to the outer cage. I stayed with him an hour. Though he was naturally afraid of me, he did not once approach panic and seemed thoroughly to understand that the wire netting was impassable, for, although he thrust his bill through it a few times, he did not once try to force his way through. He would not take the mouse, but once or twice when it was on a perch on which he was walking he pecked it as if to make it get out of his way. Sometimes he jumped over it. He frequently came back into the inner cage where I sat and sometimes stopped in front of me for a few seconds. I am inclined toward the opinion that the scraping of trees against the upper portion of the cage where he hides had something to do with his apparent boldness in my presence.

I cannot see that his skin-patch is inferior to Rhody's in brightness of coloration, and if female road-runners have duller colors than males--I have no positive information as to this--the indications are that he is a male.

At 1:50, when I went out to the cage again, I just caught a glimpse of him jumping from the floor to his retreat. I got a surprise on finding Rhody waiting at the cage door as if wanting to get in. I suppose the birds saw each other, but there was no evidence of trouble or excitement. Rhody, in fact, as soon as I approached, forgot all about the cage(and its occupant?) and came at once for a mouse, then off to sun his back and had not returned to the cage up to 3:15.

Referring to floor plan of cage p.1003. The partition DE has not been in since the extension DEFG was finished. So that cage C and this extension form one large compartment. It connects with inner cage B through doors 2 and 3 and also by a removable 3' wide by 6' high panel at the S.W. corner of cage B. This panel has been out ever since DEFG was finished. (Not shown in sketch).

I now replaced it, so R5 could not go from B to C without passing through the open doors 2 and 3. I sat in the seat shown near door 3. R5 came down from his retreat in the upper portion of cage B. (It is above the shrubs shown in the sketch). He wanted to go out to C, but discovered the way was blocked by the wire-netted panel. He showed no fear at the discoverey that he was, in effect, shut in the smaller space with me, did not become badly frightened and made no attempt to conceal himself, though he was looking for a way out.

There is a perch 9 feet long in cage B running east and west, horizontally, about 5 feet above the ground, passing over the pool shown in sketch. I placed a mouse on this, as R5 was now using it to walk back and forth on. The mouse also paraded back and forth on it, but the bird went faster so frequently met or overtook the mouse, and would step over it . This seemed to annoy him finally as he picked him up and tossed him to the ground.

Soon the bird came down to the ground in my presence (for the first time) continuing his march there and occasionally going up

into the upper portion of the cage for a few moments, but coming down again. He appeared to be more intent upon affairs outside the cage than inside, and once when he heard voices down on the street, showed distinct fear and froze rigidly. After about two minutes I got up and approached him. He allowed to stand about 2 feet from him then jumped to a perch just over my head and sat there.

It would seem that either his fear of me had decreased immensely or else that some other source of fear, rendered me for the time being, the lesser of two evils. Thinking that the scraping of the branches of the trees on the cage might be "the other evil" that drove him out of his retreat, I went out and cut the offending branches off. But this appeared to make no difference. These notes have recorded Rhody's and Brownie's fear on windy days. Presumably this bird is no different, yet it may be that his behavior actually indicates an absolute diminution in his fear of me.

It is a curious fact that, up to date, when I am outside the cage he will not come down and keeps hidden, or if down, retreats on first catching sight of me at any distance. Yet, with me inside the cage, he acted today as above. It seems that he has more fear of me outside than inside. There have been previous occasions when such appeared to be the fact.

Even after the greater freedom in my presence just described, he reacted toward me outside the cage as before.

He ate only one mouse today. (Excitement or "saturation"?)

Brownie, again, has been absent for the most part.

January 3rd. (Sunrise 7:25, sunset 5:03. Cloudless sky at sunrise)

R5 was not offered a mouse until 9:30 A.M. It was placed on a perch below him. He did not appear interested at first, but in a few minutes, came down, began swinging it around , but dropped it. He would not come down to the ground to get it, so I put it back again. He now came down, passed the mouse, and came out into the cage in front of me, showing little fear. He then returned and got the mouse. Again he had trouble in getting its hind quarters past the critical point.

Though there was a wind at the time, it was not so strong as yesterday and there was nothing apparent to frighten him in any way. (Except my presence). His coming out into the open cage in my presence yesterday and this morning, was therefore, undoubtedly evidence of lessened fear of me. He is learning from experience.

(It should have been recorded yesterday, that, when out in the cage with me, he would still retreat to his refuge upon seeing any other person in the vicinity. Julio, for example).

Rhody begins his wanderings and "spring song"??

At 10:20 A.M. Rhody was not to be found anywhere on the west lot. I have suspected, during the last few days, that he might be beginning his wanderings. I then drove about on this side of Dimond canyon looking for him at his various known haunts, without success.

About 11:15 I stopped near Dr. Reynolds' house where a group of children were playing, and Dr;Reynolds' young son, Gordon, came to me and volunteered the information (without my having asked him a question about the birds) that "Brownie and Rhody were here" and that he had Rhody calling. Asked what Rhody was saying, he said: "Coo, coo, ...". It is possible, therefore, that Rhody has commenced his "spring song" already.

heard

His coming to the cage yesterday for the first time that he has come--except when invited especially--in several weeks, may have been a symptom of spring revival of the mating instinct, although astronomically, winter is less than two weeks old.

12:20 P.M. At noon I could hear Brownie scripping over at Robinson's . Calling had no apparent effect for a long time; but encouraged by an occasional "Stick-to-it" from the bird, I persisted, and was rewarded by seeing him make a long, downhill sailing flight to the entrance. From there, with a succession of loud scrips, he ran the rest of the way to me for his reward.

At 1:50 I heard Mrs. Scamell calling to Rhody, so went down without his seeing me,and found him at his post, leaving at once.

At 2:05 he was at the fence and came over into the clearing as soon as I appeared there. Brownie was singing a varied quarter song in tree 8. A swarm of bushtits and two wrentits came to look at Rhody. I gave him meat first, then a mouse. Though the air temperature in the shade was only 56, it was so warm in the sun that Rhody did not sun his back for the 5 or 10 minutes he remained with me. He next sat on the top of the fence several minutes, then by the edge of the brush near tree 8. Here he seemed to listen to Brownie (who did not cease his song for the 50 minutes I stayed there).

Next Rhody took several quick steps and clapped his wings over his back; the first time observed in months--a gesture associated with the mating season heretofore. He did it again; he then went through all the motions of his cooing song, but I could hear not a sound at 60 feet distance. The next time he did it I could just hear the song--a weak one. He repeated it several times on the way to his post. He is out of practice, but it is his veritable spring-song and Gordon Reynolds' report was undoubtedly correct.

A woman approaching on the sidewalk across the street caused him to retreat to the fence where I was standing. I koke - koked to him softly and he seemed interested. He"sang"a few times more, but sometimes there was no sound. At best his efforts did him no great justice. He now produced an effect not seen before that seemed to be intermediate between his singing action and his wing clapping, in that he cocked his tail (which he does not do in singing) drew his head back to his shoulders and bowed slightly, but without clapping his wings or making any sound that I could hear at 10 feet. (His reflexes mixed up!). I left him there in order to visit R5.

I held a mouse up to R5, and he approached as if to get it, but lacked full courage. I placed it on a shelf. He came down and walked about the cage and hopped about the perches with full composure, finally going back to the mouse and eating it. After this a long spell of back-sunning, followed by another self-possessed tour of the cage, approaching me within 3 feet and not looking for a way out. (An advance over yesterday).

I nowwent outside and sat down to see if he would continue unembarrassed, but he retreated to his refuge and would not come down during the five minutes that I remained outside.

I now went inside and sat down. In less than a minute he was down and out of his refuge and walking and jumping about the cage again apparently with no fear of me.

There we have it again: Afraid of me outside the cage, but not inside. Roughly the explanation seems to be that he has come to feel safe, or reasonably so, inside the cage. It is at least not an actively hostile environment. Outside the cage every-thing is strange and potentially hostile. I have been in the cage so often that, when I am in it, I am accepted as a part of that not-hostile association. When I am outside I am a part of that world of strange sights and fearsome sounds, therefore not to be trusted, as long as I am out there. This of course is a guess.

January 4th.

At 9:15 A.M. R5 had already eaten his first live mouse of the day.

At 9:40 Rhody was already at his post and sunning his back.

I went to the cage and sat outside to see if R5 would come out of concealment, waiting about 5 minutes. He did not come out, so I went inside to test above theory. In a minute or so he came out, sat on a perch about 4 feet away, and sunned his back with complete composure.

At 11:15 I went to look up Rhody to see if he might be wandering and to determine whether he would eat a mouse at this time of day.

Mrs. Scamell was on her porch waiting for a car and said that Rhody, who had been examining a car parked across the street, had just had a bad scare, had crossed the lawn at great speed and disappeared. A search located him sitting quietly in the Scamell oak in which he formerly roosted at night. He cried when he saw me and came down to get the mouse. I left him sunning his back there, after having coo-cooed and koke-koked for him without eliciting any response whatever. (My imitations are not good, anyway).

About noon I held a live mouse about 4 feet from R5, hoping he would take it from hand. He came down to get it, but lacked courage to make the last necessary movement. Instead he came all the way down and went by me to the outer cage without undue haste. While he was sitting on a perch there at ease, he saw Julio about 40 feet away. This gave an opportunity to observe his reaction to this awkward situation: One person outside and I inside at the only point of entry to the inner cage. His choice was made promptly, but with dignity--no confusion or panic. It was to come into the inner cage with me, thence up to his retreat. (He later ate this mouse).

No further observations until 4:15 P.M., at which time Rhody was stowed away for the night in his regular roost. (I had thought it possible that he might go to the Scamell oak as a result of his morning's experience).

I went to the cage, and as I was closing the door after me, was astonished at seeing R5 run out from under my very feet and glide smoothly around the circuitous route to the inner cage and up to his retreat. No false moves, no panic. It does not seem possible that he was unaware of my approach. He could have slipped out the door and away without my having seen him at all!

The entrance to the outside cage is at the point shown on sketch, but it is preceded by a 3' square entry with another door opening into the yard. Both doors are usually kept open when there is no bird confined in the cage. (For Rhody's benefit --so he can go and come at will). Since R5's arrival only the inner door has been kept closed, allowing Rhody to have access to the entry where

a supply of meat is kept for him, giving him at the same time a convenient place from which he see R5 provided the latter comes down from his retreat. When Archie and Terry were in the cage both doors were keept closed as a double safeguard.

January 5th.(Sunrise 7:26, sunset 5:04).

Rain during the night, clesr all day, except for a hail storm lasting a matter of seconds.

Rhody not up at 8:45 and not again looked for until 10:30, when he came to me out of the bushes near his roost (without being called) for worms.

When I went to the fence he saw me first and cried louder than I remember having heard him before (1:10 P.M.). The two tones were almost as distinct as if he had been two birds. He came quickly over the fence for his mouse.

At 3 P.M. he was already in his roost.

R5 did not eat his first mouse until some time between 10:30 and noon. He had another at 3:20. He gains confidence every day, showing less fear of me in the cage each succeeding day. Today it was manifested in several ways: By his going about the cage with little reference to my location at the time; flying down to light on a perch on which my arm was resting and not going away hastily; watching curiously while I prodded a mouse on a perch less than 2 feet from him and sunning his back quietly at the same time; passing close to me get out into the inner cage. Also a somewhat paradoxical instance where, when he was in the outer cage and I inside, he saw me approaching, got a little nervous and wanted to go into the inner cage; but I was practically blocking the doorway necessitating his almost touching me in order to get in. Yet, with some hesitation, he did come in, and did not hurry to his usual retreat.

He chose, therefore, in order to avoid me in the comparative open of the outer cage, to subject himself to greater peril momentarily in order to reach the safety of the inner one.

This bird makes none of the various vocal sounds that any of my other road-runner friends make when I approach (ed) them to offer food, etc. In fact, except on the two occasions recorded, this bird has been completely silent since arriving here.

I think, however, I can detect symptoms of a conditioned salivery reflex.

He has a curious habit that none of the others had, shown in jumping up to a perch in the outer cage which is about 5 feet above the ground. He, more often than not, stands almost directly beneath it, back toward it. He then jumps and flies vertically until he has nearly (sometimes quite) reached the level of the perch with tail toward it, than makes a quick turn in the air to face in the right direction.

Rhody has not been heard to sing since the third, and does not appear to have wandered again.

January 6th.

At about 9:20 A.M. R5 had not eaten his mouse.

I went down to look up Rhody at about 9:30. When I reached the Clearing Brownie was singing in tree 8. Mrs. Scamell was

looking out of an upper story window across the street and talking to Rhody. When I spoke to her she said Rhody was part way down the bank,with his tail flattened up against it, near the corner of the fence, and that when I spoke he had turned his head in my direction and moved up the bank toward me. Neither Rhody nor I could see each other. Mrs. S. said:"He is coming to you." I said: "Its too bad, I shall have to disappoint him as I have nothing for him to eat". (I had gone there merely to locate the birds, not expecting that R would come for food so early). In a few moments he came trotting along the fence, crouched and flew over and walked up to me waiting expectantly, to the great pleasure of my neighbor. The best I could do under the circumstances was to invite him to follow me up to the tool-house; accordingly he trotted along at a respectful distance behind me and had his live mouse. This disposed of, he climbed part way up a pine tree, found a nice sunny place and proceeded to warm his back.

This seems to be a clear instance of Rhody's recognizing my voice, locating me by it alone (though of course assisted by previous experience as to my location) and acting accordingly.
It was also early for him to want a mouse, as judged by experience of the last few weeks. It may indicate a trend toward increasing activity of the new cycle.

I now went into the cage to look up R5. He was up in his retreat, but soon came down to sun his back on a perch about 5 feet from me, and was not disturbed when I moved about and left the cage.
Rhody and R5 were now about 30 yards apart, engaged in the same operation, without apparent knowledge of the other's presence.

I succeed in getting Rhody to sing.

12:15 Rhody has been in or near the glade ever since. At 11:45 I stood about 10 feet from him and koke-koked softly. After about the second trial he displayed his skin colors without raising his crest. Before that he had appeared to listen. On the next trial he drew his head back between his shoulders, lowered his bill and said hroo--o-o-o-o in a deep, almost guttural tone, rolling his rs. This occurred two or three times more. He then essayed his first cooing song. He was now fairly off and was still singing at intervals when I left, and his technique was improving. His coo-song was often preceded by a little "grace note" (?). His last note followed the one preceding by a long interval--after he had raised and lowered his head again. It was not really a coo, but more like the hroo above described.
Once or twice his voice "broke" on one of his coos, or, rather had superimposed upon the fundamental tone a higher harmonic of that peculiar "tinny" character I have tried to describe before.
I have not heretofore detected that preliminary note.

January 7th.
During the night the recording thermometer showed a minimum of 27 degrees.* This is the lowest temperature shown here in the ten winters I have lived here--with the exception of one night, Dec. 12, 1932 (?) when it went to 26, this being the coldest cold spell ever known during the 60 years in which official temperatures have been kept on this side of the bay.
At 9:30 (Temp. in court 34). R5 was sunning his back in the upper extension.
Rhody doing the same at his post, where Mrs. Scamell saw him at 9:20. (Did the cold make him leave his roost early?). He would not come when I called him from the Clearing, so I went

*Thermometer in error. See pp. [illegible]

out to him. He called several times while I was approaching and came part way down the bank for his meat.
When I koke-koked the only response he showed was to rattle his beak softly once ("Muttering").

As I returned to the house Brownie gave one clear, loud call from a tree under which I was passing and came down for worms. This appears to be one of the few instances where he has actually called to me. He had been silent before and remained so after. He was much concerned about what might be concealed in the surrounding trees and shrubbery, darting to cover whenever any bird flew near.

At 1:05 Rhody was waiting at the fence, crying on seeing me and coming promptly over the fence for his mouse. A half hour later he was still there in the sun. At 2:15 he had moved to his post.
R5, up to 2:15 did not want his second mouse. He has much the advantage over Rhody in comfort. (Temp. in court 40, in Clear'g 46
A cold north wind is sweeping over the ridge and dipping down into the court. If it continues clear all day and all night, and the wind keeps up, there will be another cold night.

At 4 P.M. (38 in court, 46 in Clearing) Rhody is in his regular night roost swaying about in an almost freezing wind. Since there are dozens of warmer places it seems strange that he should not seek one of them instead of adhering so tenaciously to that one. Tonight looks like a "bad one".

January 8th.

It was a bad one, the minimum in the court being 23 degrees. In San Francisco the minumum (Jan. 7) official was 34, reported the lowest in 65 years.
With regard to these temperatures it should be understood that the official temperatures of the Weather Bureau are usually taken at stations high above the street in cities and temperatures at street level may be 8 or 10 degrees lower, and on the ground, still lower according to exposure.
These minima usually last but a very short time.

At 9 A.M. R5 had already eaten his first mouse of the day. He ate only one yesterday.
Rhody was located, a few minutes later, about 50 feet west of his post, on the ground. He did not appear to mind my long overcoat and came for a warm piece of hamburger from hand. (36 in Clearing 27 in court).
On coming back to the house Brownie made his presence known and came for worms.

Rhody was given another liberal helping of meat at 1:30 in the Clearing. After that he wanted no mouse, although he picked one up and let it run away.
At 2 P.M. R5 came down from his retreat to take a mouse from the perch at the level of my face and about 2½ feet from it. On dropping it, he showed little hesitation in taking it from the ground at my feet.
He has behaved sensibly from the first, not once injuring his forehead in vain attempts to get through the wire.
He will not touch meat at all and I have not forced it upon him, preferring to buy mice for him .

R5's eyes and tail. R5, from the first, has been short of two or three of his long tail feathers, so that the pattern of white spots is not complete.

The narrow, brassy ring about his pupils, lake that of Rhody, Archie and Terry, is thinner toward the front.

Unlike these three birds, he frequently defecates from his perch.

Weather. It looks as if the low temperature of last night will be repeated.

January 9th.

The maximum and minimum thermometer in the court showed a minumum of 24 for the night .

There seems to be a slight drifting of the air from the south west with indications of cloudiness near the horizon and this may mean the breaking of the two day's cold spell.

At 9 A.M. R5 had already had a mouse.

At 9:30 (Temp. in court 32, in Clearing 45--note extraordinary difference). Rhody was still in his roost, but when I talked to him, sailed down, glad to get his mouse. Note how, recently, he has abandoned his policy of remaining late in his roost and abstaining from food.

About this time Brownie was heard over at Robinson's , but refused to come home when called.

Chance discovery of B's worm-catching ability I forgot to record it, but 2 or 3 days ago, I made the discovery that Brownie will also catch on the fly worms tossed to him. Whether this is a new accomplishment of his or a belated "discovery" of mine, I do not know. I do not recall having put him to the test before and this time it was only chance that disclosed the talent. I found he was just as accurate as Rhody.

At 11:45 (Temp. in court 40. in Clearing 44).

January 10th.

A strong wind blowing from the south east,presaging the coming of rain from the north west, but skies clear during the forenoon.

Another "first" for R5. At 9 A.M. R5 had already eaten his first mouse and when I entered the cage and spoke to him, he greeted me with one soft coo--another first instance.

The strong wind caused most birds to seek a lee somewhere. Rhody was not to be found (at 9 A.M.) and Brownie likewise.

I repeatedly made extensive searches for both during the forenoon on the property and the west lot, as Mr. and Mrs. Charles Quaintance were coming about noon for the special purpose of seeing these birds and I did not wish to disappoint them. By noontime it was cloudy but mild.

At 2 P.M., having deserted my guests for a few minutes in orde to make a last effort to find Rhody, I found him at the base of his roosting tree. He cried at once and headed toward me, but I wanted him up the clearing, so deserted him too and went quickly to the house to announce his discovery and conduct my guests to a strategical point near the expected feeding point, feeling certain that Rhody would, notwithstanding my running away from him, present himself at the Clearing in due course.

The plan worked well. In fact the bird was already at the fence waiting when hove into his field of view, but when he saw two others following me, darted into the bushes. He soon came out however, flew over the fence to me and got his mouse, though he was fully aware of spectators behind a pyracantha about 30 feet away.

R5, with first woman in cage, behaves well.

Next we went to the cage to see R5 and observe his reactions toward visitors. Mrs. Q and I went in first and stood below him, Q remaining outside. R5 behaved well, coming to a lower perch without showing ant great fear.

Next Mrs. Q went out and Mr. Q. came in. R5 came down again, even further and stayed longer.

Another "first" for R5.

Next, with Mr. and Mrs. Q outside about 40 feet away, I offered him a mouse. He came down with little hesitation, took it, but dropped it. This was a lively mouse. He came down and chased it. It ran into the outer cage and he followed, though he could see his outside audience plainly. This was another "first", as he had never before gone out into the outer cage with even a single person in view outside. The mouse got away. The bird lingered outside then came in, passing me unhurriedly, and going up to his retreat. There he stared out fixedly at our visitors and would not come down for another mouse while we were there.

This is another distinct advance in his increasing tolerance of human beings.

B was not seen during the day. About midafternoon rain began.

January 11th.

"Unusual " weather.

A very cold rain, the papers announcing the approach of another "polar wave" or "front", with low temperatures, possibly colder than any yet experienced.

Temperature comparisons.

The southern part of the state was experiencing much greater cold yesterday than this portion, for example, minima as follows:

El Centro and Palm Springs, 21 !
Glendale 12 !! Sierra Madre 18.

In cities, bearing in mind protective effect of high buildings, heating, etc. in some of them:

Los Angeles 36, San Francisco 41, San Diego 38, Eureka 36, Seattle 28, Portland 20, Reno -6, Spokane 16, Sacramento 36, Yuma 36, Fresno 32, The court at this place 36.

R in roost at 10.15.

At 10:15 (raining) Rhody was still in his roost and would not come down. He apparently had not sought protection of his house in the tree.

R5 had not eaten his mouse. Sometime before 11:30 he had.

R yields to attraction of mouse and sails down at 12:05, in new manner.

R buoyant and pretty.

At 12:05, Rhody still in his roost, was immediately interested when I appeared on the scene; he had completely revised his earlier attitude toward the roost vs. mouse problem and launched himself in a graceful glide directly at my head, instead of sailing to one side as usual. He banked neatly just before reaching me and landed to one side. He was not very wet. Far from looking folorn and bedraggled--he, with his buoyant and expectant attitude, raised crest and displayed red-white and blue, poised on his long legs lightly with his "skirts" fluttering in the breeze looking like some colorful dancer, added a bright note to the dull surroundings. Rhody can play the clown when he feels like it, but he is a pretty, graceful bird just the same.

When I had returned 200 yards along the street to the entrance Brownie called from 200 yards farther to the east. I tried to call him home, but he had other plans, presumably, so I left for the house. However, he must have changed his mind, for there was aloud, continuous scripping approaching from the rear before I had gone very far and B came out to get his worms. There were but a few drops of rain on him.

At about 2:45 R5 was ready for his second mouse. After eating he hopped about the cage while I was in it in a quite friendly manner.

At 3 P.M. I was pleased to discover that Rhody had tucked himself away in his house and was well protected from the rain and the worst of the wind.

January 12th.

The thermometer in the court showed a minimum of 30 in the night.

At 9 A.M. Rhody was not in his house, but in his roost a few feet from it subjected to a bitter wind from the north. He would not come down.

At 11:25 he was waiting at the fence, crying on seeing me, then coming over for his mouse. (Temp. in Clearing 41, in court 36) He retired to rest in a low acacia at the south fence of the Clearing (now marked 15 on the map). (Acacia latifolia). He has shown a tendency lately to use this tree for an hour or two in the daytime during this cold weather. It is out of the north wind, commands a wide view in many directions, is comparatively isolated and gets full sun.

12 M. Sun shining brightly, clouds disappearing. With temperatures as low as at present, wind from the north, snow on high points, a clear sky at night may mean much lower temperatures to come.

2P.M. Rhody still in the same tree.

4 " " " " " " " , wants no mice or meat.

4:15 " now at his post, leaving soon in direction of his roost.

R5 was satisfied with two live mice during the day.

January 13th.

Although the night was clear (as much as I saw of it) and there is snow about 1 mile away and 500 to 1000 feet higher, minimum temperature was about 34 degrees in court. (The north wind died out before night and the sun stored up enough heat to carry through the night in spite of hazardous conditions).

At 10:15 A.M. Rhody was in his house in the roost tree, looking perfectly comfortable. He would not even look at me when I offered a mouse. (Cloudy--no sun at all, temp. in court 40, in Clearing 45). R5 had eaten his first mouse of the day some time before.

An hour later Rhody was not there and could not be found after prolonged search in all his known haunts.

12:15, No Rhody. 1:30, ditto. 2:45, do. 3:30, do. About 5, still no Rhody. (An Accipiter was in the trees and brush of the west lot, passing within 20 feet of me at 11:15 while I was there. It was about the neighborhood allday, under and over the trees).

January 14th.

Last night and the night before, rain. Moderate temperatures.

At 9:10 A.M., Rhody not to be found. R5 had already eaten his first mouse of the day. Raining.(Temp. in court 42).

While standing near Rhody's roost tree, Brownie could be heard singing loudly over at Robinson's. The distance by scaling map of the tract was found to be somewhat over one quarter of a mile.

Rhody's absence may be an indication of increasing mating urge.

At 11:15 another search for Rhody produced no results as regards him, but, as I turned from the ladder tree, a thrasher called loudly and imperatively from it. I spoke to it and Brownie (of course) came sailing down and jumped to my hand for worms. He was, as will be noted, a quarter of a mile from where he had been singing when first (and last) heard. I returned to the Clearing and he to the tree whence he came, and began waking the echoes with his song. I waited, and soon Nova (?) appeared from nowhere and ran to the tree. The song ceased, there was the greeting sound between sexes (h-a-i-r, without the r), Nova appeared upon a branch and preened for the ten minutes that I remained. At the end of that time B was starting an undersong and conversation.

The sun was out and the roofs were steaming.

I went to the cage to watch R5 sunning his back and to talk to him. I tried all the road-runner vocabulary on him that I knew without producing any perceptible reaction that might be construed as recognition of my efforts as, in any way, of importance to road-runners. He looked down upon me from his superior elevation with tolerance, but continued to sun his back as if nothing else was of consequence.

12:30 (Temp. in court 50, in Clearing 54). No Rhody in Clearing but Brownie found me there almost at once. (Clouding up).

At 1:45 I approached the Clearing looking for Rhody. He must have seen me first, for my first sight of him was of him almost at my feet and coming toward me eagerly, already on my side of the fence. I had no mice with me, so turned back toward the shop. Rhody needed no urging and ran after me, but keeping in the bushes about even with me, instead of following in the open road, and behind. There was no doubt of his being hungry! About half way to our destination he stopped for a moment and rattled his bill, as if in protest at my making him go so far uphill, when, presumably, I could just as easily produce a mouse there as any other place and save him all the effort! However, I kept on and he followed. R was not aware that I had shifted the mice from the shop yard to the tool-house, which has a large door adjoining the gate to the yard. So when I went through the door, he kept on a few feet farther to the gate, but soon discovered his error and came back to the door, where I gave him his mouse. He was hungry, so I offered him another one, and this followed so closely after the first that it must have helped push the other one down further.

I left, returning about 2 minutes later. R was at the cage looking at R5, who was in the outer cage on the ground, interested in Rhody, but retreating to the inner cage when he saw me, although still staying on the ground. The birds were watching each other but were not excited. Rhody soon darted off to the glade at high speed, but did nothing when he got there.

I tried to make him sing, but the most he would do was to give 5 or 6 tremendous rattle-boos in quick succession, and after a few more efforts on my part, to repeat. He then drifted away, and at about 2:30, I found him already in the ladder tree. At

2:37 exactly he jumped to his regular night roost. He has evidently been wandering and apparently has not had too much to eat

Before looking up Rhody at his roost, and after trying to get him to sing, I went into the cage with R5, who was very composed and ready for his second mouse. He gave this one a thorough beating upon the sand box where I had placed it for him. As usual with him, he had some difficulty in getting its hind quarters past the "hinges" of his bill.. After this he retired to the outer cage, where, for the first time observed, he sat quietly on a rock instead of trotting back and forth and jumping up to and down from the perch. He seemed more or less intent upon the cover into which Rhody had disappeared--and perhaps he was.

On returning from watching Rhody going to roost, Brownie again located me. This appears to be his day home. Nova was nearby in the shrubbery.

January 15th. (Sunrise 7:24, sunset 5:14). (The sun is now beginning to rise earlier, but only by a minute in three or four days). Temperatures are about normal after the freeze.

I looked for Rhody about 10:20 A.M. (Temp. in Clearing 50) but he was not to be found. Perhaps the double-mouse feed yesterday fortified him enough to warrant his wandering about a bit.

About 10:30 Brownie was singing vociferously in a small, isolated pine tree in the open north of the north-west corner of the property. On call he came for worms. While sitting on my hand he heard a thrasher a long way off to the north and reacted at once, giving a few low calls. He then flew to a branch 10 feet away and sang loudly for several minutes. (On both occasions announcing his territory occupied?)

By about 11 A.M. he and Nova were singing a hysterical duet in the old oak; they were really noisy as neither attempted to coordinate his efforts with the others. This last for perhaps ten minutes when they began to go from tree to tree, still singing. About 11:20 they were in the "chaparral" near where they started their first nest last year, still vocal. Both soon perched in full sight of me 5 or 6 yards away and about the same distance apart. Nova pecked pettishly once or twice at a honeysuckle twig--a characteristic gesture of hers when near me--Brownie was now rather more interested in the prospects for more worms than in Nova, but kept track of us both.

Nova moved to a sapling redwood, B alighted two feet above her. Nova crouched, spread wings, raised her head and opened her bill. One of them (or both) haihed. There being no further actin I left at 11:30. They were then talking somewhere in the glade.

A little before 11 I went into the cage. R5 had eaten his first mouse and cooed once for me (second time).

At 1:50 Rhody was still missing, but as I was in the cage watching R5 he saw Rhody coming, cocked up head and tail and displayed his colors. R saw R5 also, but went straight to the meat dish (now outside in the entry) helped himself and came close to the wire to look at R5, standing in front of the mirror, but giving only one brief glance at it. R5 moved back and forth unexctedly on the perches, disregarding me and watching Rhody with much interest. Rhody returned the scrutiny with raised crest and displayed colors and kept his place. He appeared less interested than R5. Neither bird made any sound. When R appeared to be los-

ing interest slightly I offered him meat through the wire and he picked small pieces off of it.

I now went outside to see if his interest in mice was stronger than in R5, so went to the tool-house to get one, hoping also that R might carry it about (or to R5) as a courting gesture. Rhody did follow me to get the mouse. This time he ran off with it to the old oak, took a rather long time in killing it, but showed no intention of using it as an offering, remaining quietly standing under the oak.

I now returned to the cage and went in, thinking it barely possible that, if I cooed, etc. Rhody might be fooled into thinking it was R5 and come. (They could not see each other as there is a bank with trees and shrubs between the cage and the glade). R5 was still interested in R and seemed to know about where he was. My imitations are poor, but twice, separated by an interval of about 5 minutes, I did stimulate a rapid succession of beak rattles (without voice) from R, but he would not come and stayed quietly where he was for perhaps 20 minutes, later moving to within 40 feet of the cage, but still out of sight of it and not at all interested in it. In fact he remained faced in the opposite direction until 3:15 when an entering car caused him to seek refuge in the glade.

R5 contined to look for Rhody, and once walked between my feet to get out into the outer cage. He caught a mouse placed on the ground at my feet, but let it go. When he began to pace back and forth on a long perch I placed the mouse in his path. He jumped over first. The next time he picked it up and dropped it to the ground, as if to get it out of his way. He was still interested in R's whereabouts it seemed. Finally he lost interest in outside affairs, and when I put the mouse in his can, went and got it [illegible] promptly, ate it and retired to sun his back. This ended the episode.

At 3:30 Rhody left the glade, presumably for his roost. Before this Brownie had discovered me there 8 feet from Rhody. He was a little "stiff" about R, but R pretended not to see him at all.

This "stiffness" of B's on such occasions usually shows as a sort of stiff-leggedness in his walk. At times, however, as on this it is manifested by a peculiar mannerism which consists in slightly lowering his upper lids and raising them again at irregular intervals.

January 16th.

I looked for Rhody at 10:20 unsuccessfully, so decided he was out roaming around and gave up. However, when I approached the cage he was sitting quietly on top looking at R5, who was calmly sunning himself in the open part of the upper annex. I went in and closed the door between the inner and outer portions and invitd Rhody, who was now down on the ground watching me, to come in; but he gave one short rattleboo and strode off to warm his back at one of his favorite spots just outside the glade.

Just before this, as I turned up the driveway on my return from R's roost, Brownie, scripping loudly,came up from the street to me. While he sat on my hand, he continued to scrip. (Nova answering him in the same way from the glade.

I listened intently to B's call, trying to analyze it, but it was hopeless. I could not detect the consonant (if any) with which it begins. There may be some sort of a "stopped" sound there -- I think there is, but all I can be positive of is that it "just begins". There was no S, nor was there an R. The vowel is; most

certainly a short I. The terminal consonant, produced by shutting the bill, is a P, or of not that letter, it is more like it than any other. The sound seems to begin with the bill wide open.

At 10:50 I proceeded cautiously to the cage so as not to interrupt any drama that might be in progress; but everything was quiet, R5 sunning his back and R nowhere to be seen. A loud rattleboo off toward the glade informed that Rhody knew all about my movements, and a glanceein his direction revealed him just coming out of the bushes and beginning to spread his feathers for a back-sunning while awaiting further developments. I knew, of course, that what he wanted was grub, so headed for the tool-house, followed by him; but when I went inside he went into the shop-yard .

Not finding me there he jumped to the window sill and tapped on the glass, looking in at me. I held a wriggling mouse by the tail close to the glass and he tried to get it. When I moved to the tool-house door, although he could not see me from any point along the route that he would have to follow, he reached me promptly, crying with lowered head. I teased him no more, and he went off to sun himself on the bank by the fig tree.

Meanwhile R5 had not eaten a grey mouse that had been placed in his can, although he had gone into the can to look at it. He allowed me to hold it less than a foot from him, but edged away. Thinking that, as he has been more accustomed to white mice while in the cage, a white one was substituted with no effect.

When he went into the outer cage I followed shortly, and for the first time, he tolerated my presence there at the same time. He also (another first) picked up and "killed" a leaf.

At about 12:30 Ilooked up R, finding him by the sage patch at the eastern edge of the glade. (The place referred to above as one of his favorites). He was studying his surroundings with colors displayed, but without crest raised. I tried my repertoire upon [illegible] without effect.

He now pulled a short, thick twig out of the soft earth, looked about as if considering what to do with it, then headed for the cage, going directly to the mirror (which was not in view from his starting point) and there depositing it. R5 was out in the outer cage sunning his back on the perch across the southwest corner. He was aware of my presence, but did not leave. (Another first for him). He was watching Rhody without excitement. R glanced at him, but returned to his place near the sage.

At 12:45 he ran quickly to the cage, stood in front of the mirror looking up at R5, who was interested in him but not afraid. R went up to the roof to look in the window at R5. (See p.1135A). He remained quietly there for 15 minutes, R5 being in that portion of the upper annex and hopping from perch to perch cocking up head and tail and swinging the latter, much interested in R and not appearing frightened. (I left with both birds engaged as stated).

Returning for a minute or two at 11:30 R was still on the roof but farther from the window and not watching R5.

Another brief visit about 1:45 I caught a glimpse of R5 standing quietly on the ground in the outer cage watching R peeking in at him and occasionally making a short dash parallel to the wire with spread wings. R then vanished utterly, but I found him at the sage again.

During all this neither bird "said" anything. nor was there any appearance of animosity on the part of R, nor fear on R5's part

R5 had not eaten his mouse.

At 2:35 R5 had disposed of the mouse, and Rhody had gone. He could not be found after a search of more than 30 minutes.

At 4 P.M. I climbed the bank to make absolutely certain that R was not in his roost tree, when I heard a slight sound behind me and he was just arriving at position No. 1 in the ladder tree. At 4:16 he jumped to his roost. (Sunset 5:15, temp. in Clear'g 53).

Reviewing today's happenings, wwe note:Increasing tendency for Rhody to stay nearer "home". (The same might also be said for B).

Increased interest of R in R5.

R's adherence to the conception that the shop-yard should be the terminus of my march to get him a mouse; his ready renewal of the act of following me there after a long period during which it was performed only once or twice.

His quiet "study" of R5, and restrained attitude toward him.

His first twig-carrying action for months, followed by immediate presentation to the mirror .

His late retirement to his roost. (clear and sunny at time)

R5's ~~increasing~~ first tolerance of my presence outside the cage. (There was a second example later--not recorded).

R5's apparent lack of fear of Rhody.

His abstemiousness as to mice. (He ate only one today).

His first noted picking up of an object and "killing" it.

Rhody's failure to sing and the voicelessness of the two birds in each others presence.

In all this there was no positive light thrown upon the m matter of R5's sex. It might be considered that Rhody's twig-carrying was a nest-building reaction stimulated by the presence of a supposed female (R5) and his gentle behavior toward that bird might also be considered as pointing in the same direction. But, on the other hand, we have R's unprovoked attack upon R5 when he was first introduced the other day and R5's bright skin colors as perhaps contrary evidence.

January 17th.

At 9 A.M. (Bright and clear) Rhody was already up and at his post. He would not come to the clearing on call. (46 in Clear'g).

At 10 A.M. he had moved nearer to the fence and cried when he saw me. He then came over, but I had no mouse for him and started for the shop, expecting him to follow, but he did not, for when I returned with a mouse, he was back over the fence again. However, he returned quickly.

Sometime between 12 and 1 he went to the cage and ate a freshly killed mouse put there for him. At 1 (visitors present) a glimpse was caught of him at the mirror, but looking up at R5.

At 2 P.M. as I was looking for him in the orchard, he cried and rattled his beak as I was about to pass him. A few minutes later, while a nephew stood beside me, he came up the bank to us and took his third mouse of the day--much to my surprise. Evidently his appetite is improving. It is a long time since he ate three mice in one day. (I had bet him a dollar that he wouldn't!)

At 3 P.M. I saw him apparently headed for his roost.

R5 had eaten nothing up to about 2:30 P.M. A dead mouse had been put in the sand box in the cage for him last night and it was untouched. Thinking he wanted a live one, I held one about a foot below him. He dropped down past it and ate the dead one almost at once. Yet he had passed it up for hours.

Up to 4:30 P.M. he had not touched the live one placed in his can at the time he refused it. He was now very restless because

of the high voices of children playing 200 yards to the north and 250 yards to the south.

It seems that all road-runners at this place are alike in their fear of childrens' voices, even at a distance.

One naturally wonders what inspired Rhody so suddenly to make his noteworthy gormandizing effort after months of moderation. Will he stay in his roost late tomorrow because of this huge feed; or will he, fortified by all this potential energy stored under his belt, cruise on a wider radius in response to awakening mating instinct?

January 18th.

At 9:10 A.M. Rhody was sitting in his house in the roost tree, but sailed down to me promptly, feathers of his wings bent upward in smooth arcs. He wanted worms immediately and caught them at all kinds of difficult angles, searching out my wild pitches where they landed amongst the dry leaves promptly with an expression of intense interest. As a partial answer to yesterday's last paragraph perhaps, it can be said that his early morning appetite was not adversely affected by yesterday's indulgence.

When I moved off he tore away in one of his curving dashes through the bushes; this time it appeared to be for the benefit of some towhees who sat in the upper branches. (Cloudy, rain threatening; 43 in court).

R5 had already eaten his first mouse at 9 A.M.. He and Rhody reversed eating roles yesterday.

At 12:30 P.M. I drove by Rhody's roost tree and saw that he was comfortably stowed away in his house. It had been raining heavily. I spoke to him, but drove on quickly as I had no food for him.

At 12:45 I approached his roost with a mouse. He was already down at his post, cried and "muttered". (Rattled his bill softly without vocal accompaniment). He came promptly down the bank for his mouse. He was dry. Therefore, while it was raining he had probably not wandered far from his roost and had returned with little delay to the shelter of his house.

At 2:05 R5 decided that he would eat a second mouse today.

At 2:15 Rhody, at his post, would not come to the clearing, but when I approached on the sidewalk, did not hesitate to come down the steep bank, greeting me with a cry, and take a big piece of hamburger. It had rained hard once more since 12:45, but he was dry. The sky was now clear, with a chilly north wind.

About 4:30 R5, for the first time, came out into the outer cage while I was there (inside) showing little constraint and staying there behaving much as if I were not present. Rhody was in his roost at that time.

There was nothing during the day to indicate that Rhody's unusually large consumption of food had any especial significance.

January 19th.

At 8:30 A.M. (39 in court, 46 in clearing) Rhody was already at his post and would not come to the clearing for worms.

At 9:30 he was not there.

At 10:30 I found him standing in front of the mirror looking up at R5. Both had their crests raised and skin-patch colors fully displayed, but otherwise showed no excitement.

I went inside to get a closer look at R5's colors in order to compare with Rhody's. Rhody was in full sun and R5 in shade. This would, of course, make some difference, but, as far as I could determine, the colors did not differ substantially. Further, they were arranged in the same pattern. However, the test can not be considered conclusive.

R continued to watch R5 for 15 minutes without change of location; then, when R5 went into the upper annex, R, unhurriedly, went to the roof for a closer view. There were no threats, displays or abrupt movements of any kind--no vocalization.

When I came out of the cage and stood outside the outer one, R5 came out into the latter--another first for him. R remained on the roost, but came down (about 11) to get the mouse now offered him. He wandered off to the glade, R5 watching his departure interestedly and remaining in the outer cage (disregarding my movements). They now seemed to forget each other and fell to sunning their backs.

Rhody looks larger in every way.

At 12:15 R was still in the glade lying on a bed of leaves in the sun. He cooed softly once when I stood in front of him. The compliment was returned, but to this he replied with a soft rattle of the beak with, possibly, some expulsion of his breath. The effect was that of a sort of pooh, as if in contempt of my utterance. After one or two more attempts by me, he gave four or five resounding rattle-boos in quick succession as if to put me in my place once and for all. I did not accept the hint, but stayed there (6 feet in front of him). At about 3 or four minute intervals he gave forth a cooh-co-o-o-h, four times while I was there. This "cuckoo" was soft, sweet and low. It was not at all like his coo-song, and I do not think it was his hruh-hroo. Certainly it did not sound the same. As near as I could get it was:

Coo-oo
Cooh

the last coo being long drawn out, first rising in pitch and then falling

At 1:15 Rhody was still there, but his attitude toward life (and me) had changed materially, for, as soon as he saw me coming, he ma-ed plaintively and kept it up. I could look down his throat and, as far as I could see he was all "black" inside. This time I understood what he wanted and went and got it for him.

At 1:45 I offered R5 a dead house mouse. He came down to the shelf upon which my hand rested, but stopped a foot away. On withdrawing my hand, he took the mouse, but dropped it.

He now swung his head back and forth sidewise with widely opened bill as if trying to disgorge a pellet. (None has ever been found in his cage). Finally he disgorged a huge pellet, the largest I have seen from any road-runner. I judge 4 or 5 times as large as any rejected by Archie or Terry. I have had him in the cage 31 days, and this appears to be the accumulation of that period. It must have interfered materially with his digestive processes, and it seems probable that it had something to do with his

decreased mouse consumption during the past few days.

As observed in the case of Archie and Terry, rejection of pellets after a meal containing indigestible matter is not a matter of regular routine as with hawks and owls. Pellets do not appear to be formed except as an accretion over a long period of time: roughly, in the case of A and T, one or two months. (Pellets of these two--actually found--averaged about 1 per bird every two months. However, R5 is eating practically nothing but mice).

By 2:35 R5 had eaten his second live mouse, and Rhody, because of shde encroaching upon his resting place, had moved into a sunny place on the bank near the fig tree and was lying on a couch of pine needles which had collected on a little bench. He was, now, not interested in me at all, making no sound and no movement other than to roll his eyes into a little better position in order to be able to see me better, and, I suppose, assure himself that there was no necessity for adopting protective measures.

To a certain extent we have here a demonstration of Rhody's "vocal attitude" toward me correlated, more or less, with the state of his hunger, or so it appears to me. This is, of course, pure speculation; but it will be noted, that, at 12:15 (an hour and a quarter after having had a mouse) he was clearly physically comfortable and was not in need of food. His coo on seeing me was probably only a recognition call (to a friend?). His pooh and rattle boos may have been in protest against my disturbing his rest with my various noises. His "cuckoos" followed after I had ceased to annoy him thus. I can only guess as to their import. Possibly they were only an expression of well-being--or maybe an abortive effort at his regular coo-song.

His ma-ing (crying, whining) at 1:15 was his customary call for attention--usually meaning food.

His disregard of me at 2:35 showed that he wanted no more food, was intent upon enjoying the maximium of physical comfort and was not fearful of my presence. Further, he was not annoyed by my "noises" as I made none.

A cold wind from the north blew all day. Cloudless sky. We shall be in for another freeze if this condition is maintained.

January 20th.

Well, it was! The north wind increased in violence during the night and decreased in temperature. The minimum thermometer in the court indicated a low of 25 degrees.

At 9:40 Rhody was in his roost as I passed by in my car, sitting in a cold wind; yet there was his regular sunny bank waiting for him.

On returning by the same route, he was seen at the fence with Tommy-Leo, the white cat that chased him so determinedly as recorded in these notes, only 20 feet away watching for gophers. They seemed to have arrived at some sort of armistice. I clapped my hands and the cat (who does not like me--though I have never harmed him) bolted directly toward Rhody. Rhody naturally decamped "with what feet he had".

A few minutes later I went to the glade. R was not interested in mice, though he had returned to the fence. Brownie, however, discovered me there and came for worms. (He found me four times yesterday). R now began to act as if he wanted to cast up a pellet, behaving as R5 did yesterday, but with the addition of two or three choking "pucks". He succeeded--for the first time observed in his case. He was now

He was now ready to consider the mouse question, then retired to the sunny side of the bushes surrounding tree 8.

Brownie had already gone into these same bushes and was singing full song of a type strange to me. I would have said that it was not B, if I had not seen him go there. Rhody was sunning his back within about 6 feet (?) of B and very unmistakeably listened to his song every now and then. During a lull in the song I called B and he came for more worms. In this way I verified the singer and his approximate singing point. B then returned to the same place (Rhody had not moved) and resumed song; but it was now a "half-song" of entirely different character. I left with the situation unchanged. (36 in clearing, 32 in court, but comfortable in sun without an overcoat).

R5 had eaten his first mouse some time earlier.

At 11:45 I was in the cage observing R5. From his attitude I suspected that Rhody must be somewhere near, and on looking about, found him lying still on the roof of the outer cage about a foot above my head. The only response I could get out of him by talking to him was a slow, rhythmic raising and lowering of his tiny "moustache" feathers, occasional similar movement of the short feathers of his forehead and movements of the eyes now and then to glance at me. (His moustache and ear coverts can be moved independently). Both bird could see each other plainly, were on about tthe same level and 12 feet apart. Their relative positions (as well as absolute) were not changed during the three quarters of an hour that I remained.

Rhody, unexpectedly, was facing the sun all this time and did not, therefore, sun his back. R5 was sunning his continuously. Neither seemed to pay any attention to the other. Rhody was about a foot from the corner of the magpie cage and 7 feet above their bathing pool. To replenish the water in the pool I opened the valve and an explosive blast of air issued, followed by a milky white air-water emulsion. Rhody, except for a momentary contraction of his feathers and a glance in the direction of the sound made no response. The magpies set up a loud scolding, sometimes as near R as 18 inches, but he disregarded them entirely. R5 behaved like Rhody and continued to sun his back. I left at 12:30.

Returning at 1:15, R was in exactly the same place, but now standing up still facing the sun. I offered him a piece of meat through the wire. He took it in the same curiously gentle manner described in connection with feeding operations when A and T were squabs in their nest.(Just before this I had pulled out my watch to note the time and he had stretched his neck down to observe the action, connecting it perhaps with anticipated offer of a mouse

He had made no sound whatever.

R5 now came out into the outer cage with me. Rhody watched with no more interest than he showed in the magpies, though R5 glanced up at him from time to time. R5 selected a place in which to sun his back on the ground not far from me. Next he pick-ed up a pine needle and carried it about. Next a crumb of dried meat. The first time he has been seen to touch meat. He dropped it and ran to look into his mouse can. There was nothing there, so as all this indicated hunger, it seemed a good opportunity to try to get him to take a mouse from hand; so I went to the tool-house to get one for each bird, not thinking that the stationary Rhody would follow; but he did, coming to life at last and getting his mouse.

The test with R5 proved a failure. The mouse was put aside for a further trial later.

2:30 P.M. Rhody has not returned to the cage since last observatin and has remained in the orchard.

R5 was tested again with a mouse but would not take it from hand, though he plainly wanted it. It was again set aside for a later trial.

At 4:05 another trial was made with R5. Though he would come closer to me than was necessary to get the mouse, he would not take it from hand. He really wanted it and frequently "tasted". It was finally laid below him in the sand box and he disposed of it in true road-runner fashion. He continues, unlike Rhody, to have trouble in getting the creature's haunches past the corners of his mouth.

11:30 P.M. (Night). The thermometer in the court is already down to 28; sky clear; north wind. The scene is set for a continuation of the record cold.

January 21st.

(Minimum in court last night again 23).

At 10 A.M. Rhody was waiting at the fence and came over for his mouse. Shortly after he was sunning in the glade. He is staying inside more now. R5 the attraction?

11:45. At 11:15 I was in the inner cage with R5, who began to show curiosity about something outside. This was Rhody bearing something very small in his bill. R5 now went out into the outer cage. R ran slowly toward him, changed his mind and went to the mirror (3 feet from me) and glanced at it--no posturing--no display, The thing in his bill was a piece of a twig only one inch long. He shifted it about then dropped it. He now approached R5, but when turned a corner of the outer cage where he could see him plainly, retreated at once. This was repeated. He then went up to excatly the same place on the roof that he occupied yesterday and lay down facing the sun and watched R5 in a casual sort of way. Facing the sun and neglect of back sunning appears to be accounted for by the fact that the attitude which he assumes commands the most complete view, perhaps, of the cage interiors; the place is also warm enough to be comfortable without back-sunning.

Rhody, by his actions, showed no disposition to come to close quarters with the other bird. R5, however, definitely wanted to get close to Rhody and, several times, went up to aperch just under him, even when I stood by that perch. Here was 2 to 3 feet from R and once while there hrooed softly, R paying no attention.

This is the first greeting of one bird by the other and is a repetition of R5's two recorded greetings of me in the same manner. When I left R was still lying in his chosen spot and R5 had retired to the upper annex to sun his back.

At 12:15 R5 had eaten his first mouse and R was at the sage patch on the east side of the glade sitting in the lower branches of a small redwood. He cried, indicating a desire for food. He did this several times. He made no other sound than the ma-a-a. When I left he repeated it. I went to get him a mouse and , on returning, found him on the way to join me. When I showed him the mouse he "muttered" once, very softly. This mouse was so big that even Rhody had some difficulty in swallowing it.

There is interesting parallelism (and divergence) between R5's and R's yesterday's and today's behavior, under fairly similar conditions.

(Absent until 3:30). On returning Julio stated Rhody had been to the cage again, and had just left there as I came in and was on the bank near the fig tree. I called him up to the driveway, through the shrubbery on the bank, and offered him a mouse. He cried, took it and then abandoned it without killing it.

At 4 P.M. R left for the west lot. I had to go out again and saw him near the ladder tree. On returning about 4:30 I was surprised to find that R was not in his roost, so began a search in of the lot to see if he had adopted another place, less exposed.

In a few minutes he dropped down from a tree and headed toward the ladder tree. He jumped to his regular roost at precisely 5:00½--late for him.

When Rhody abandoned the mouse it was offered to R5. As he had not taken it at 5:10, it was put back with its fellows. R5 thus had only one mouse today.

Weather

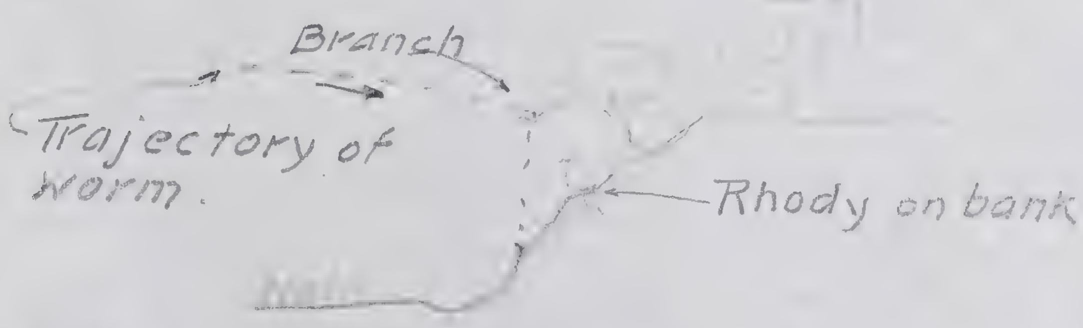
There are no indications that the cold snap is over.

January 22nd.

Cold again, but not so cold as last night. (I had forgotten to reset the minimum thermometer).

At 9 A.M. I went out to see if Rhody was still in his roost and was walking rapidly along the sidewalk near his post, when I came upon him suddenly 4 feet away, sunning his back. He did not alter his pose in the slightest. He probably saw me coming. If so, there can be little doubt of his having recognized me, because he would have fled from a stranger long before he got near.

I now witnessed a detail of his behavior that, to my mind, gives evidence of a certain ability to perceive a connection between an action and its probable consequences in an entirely new situation and act upon his judgement as to what that consequence will be. In this particular case that judgment was wrong, due to the fact that the action, through accident, did not produce the result that it ordinarily would have. The sketch below shows the physical set-up at the time:



Rhody sat on the bank as shown. I stood on the walk and tossed a worm along the course marked "Trajectory of worm". The worm struck the branch overhanging Rhody and fell on the slope between him and me. If it had not struck the branch it would have gone over his head and landed beyond him under the bush. He did not see it strike the branch and fall, but expected it to pass over his head, and as a consequence, looked for it where it should have landed and not where it did. To make sure that it was not through accident that this action was brought about, I repeated the act several times with the same result.

I did not give him a mouse until an hour later, at which time he was sunning in the orchard. 3 hours later he was still there and was given another.

Thus it will be seen he is returning to his old habits again.

I had little time today to devote to R and R5 because of two Anna Humming-birds, nearly dead from the frost, that I had to bring back to life. R5, however, had his two mice and R probably visited the cage.

Effect of Cold on Anna Humming-birds.

These two exceptional cold snaps, besides having caused the probable death of many of these birds directly through cold, have also, no doubt, indirectly, had the same effect by destroying the flowers on the nectar and insects of which they subsist. In addition they have decreased the supply of available water.

Miss Bourne, at whose home Archie was found to roost, called by phone to ask what to do about two humming-birds that she had found in her garden apparently in a dying condition. I told her I would get advice from Mr. John Brock as to proper food and then go to her place. Accordingly I called up Brock and he advised a mixture of honey, milk and Mellin's food. Getting these foods together, I picked up Donald Brock and we went to Miss Bourne's home

She had been advised by a biologist (!) not to put them in her living-room, as it would be too warm for them! So they had been kept over night in a card-board box in the basement. When the box was brought up, the two birds were apparently dead: one on its back and the other face down, wings spread, both motionless. It looked hopeless. However, by looking closely, some movement was perceptible. I took a bird in each hand and held them in the stream of hot air coming out of a register while Donald prepared food.

Soon I could feel the birds making some slight adjustments in their positions--they were "coming back." We now dipped their bills into the mixture, though their eyes were closed and they still looked all but dead. We worked their bills slightly with our fingers. They ran out their tongues. Soon they were thrusting their tongues with great rapidity into the food and swallowing at each thrust. I relaxed my grasp slightly and my bird was off with a buzz and hummed about the ceiling with astonishing energy where we could not get at it. Fortunately, in a remote corner, a spider's web fouled its wings and down it came, once more "dead".

We revived it and put both in a cage, covered them and brought them here. After another good feed, they got sleepy and dozed comfortably on their perches. It is their upper eyelids that are the more mobile, just as in human beings.

Upper eye-lids more mobile.

They were fed several times before sunset and were so hungry that one could see the level of liquid in the spoon gradually lower. They also found the water dish and drank from it frequently without assistance.

They are now in their cage (11:15 P.M.) asleep on their perches, in the living room, covered by a cloth, with a thermostatically controlled light bulb in a chamber under the cage floor.

One is an adult male and the other appears to be an immature male just getting his rosy purple gorget, with ruff, and flecks of the same hue all over his head.

Miss Bourne found them sitting close together in an asparagus "fern" where it had climbed under the entrance porch. They were then "nearly dead." The fact that they were shielded from the sky (which was clear) and therefore lost no body heat through direct

radiation to the sky was a factor in their favor.

We also appear to have here an example (bearing in mind that humming birds are now courting) of two males, under conditions of great stress, seeking each others company for warmth and roosting as close together as they could get, forgetting their natural antagonism. There is, of course, a possibility, perhaps remote, of the juvenal bird being an offspring of the adult and there being some vestige of attachment between them. This, however, seems highly improbable, especially in view of the reputed indifference of male hummers to all parental obligations.

There is also another possibility, and that is that the smaller bird is a female, and they are mates.

In the hope that they will soon be able to feed themselves, I have made a "flower" out of a small vial (having a capacity of 8 cubic centimeters) and a piece of red crepe paper, and placed it in their cage, filled with the food mixture.

January 23rd.

At 8 A.M. the little hummers were full of "pep". I prepared more food for them and had visions of hand-feeding operations conflicting with a wedding at San Mateo at 4 P.M. (G.K.D.). Fortunately, as I was about to catch the first one and feed him, he went to the flower and began pumping vigorously. He was soon followed by the other. Thereafter all I had to do was to see that they did not run out of food. That part of the problem was solved.

They also drink water freely from the vessel in the cage.

Of all the wild birds I have made friends with, these are the most fearless of man. They seemed to accept my presence and actions as a matter of course. They do not hesitate to sit on my hand when I put it in the cage, are not annoyed by rapid movements, do not show fear when spoken to at a distance of a foot or two and do not try to get out of the cage.

They are tremendous eaters,(for the present at least), and, incidentally, never have I seen any creature that evacuates so frequently.

I had little opportunity to contact the two road-runners and Brownie during the day, though all of them had their usual "handouts" before I left.

January 24th. (Cold wave broken? Temp. in court 9 A.M. 46).

The little hummers seemed perfectly fit in the morning. When I carried them to a sunnier room, it was interesting to see how one of them remained in the air during transit without coming in contact with either the wires of the cage or the perches--he actually flew, while in the cage, from one room to the other and ascended three steps! The other remained on his perch for part of the time; part of the time in the air, and the rest of it eating out of the "flower". In renewing their supply of food, the red paper was removed from the vial . Its absence seemed to make no difference to the birds --they found the food just the same.

At 10:30 A.M. Rhody was still in his roost. About noon he came over the fence to get his first mouse of the day.

At 2:30 P.M. I found him at the cage, with R5 on the ground in the outer cage, R looking at him. There was no displaying by either bird, but R5 picked up pine-needles,carried them about a few seconds; dropped them and picked up a stone and carried that

for a similar period, then pounded it on a rock. He did not retreat to the inner cage, even when Rhody left him and hung around my feet. This action of Rhody's meant, of course, that he wanted another mouse. He followed me to the tool-house door; there changed course and went into the old, familiar shop yard, there to look in at me through the window. Again he tried, not very persistently, to reach the mouse through the glass; but when I went to the door, he was there about as soon as I.

I looked once or twice during the afternoon to see if he might again be at the cage, but he was not. Part of the time he spent in the orchard.

R5 seemed to be satisfied with two mice today, and also seems more or less to be on the lookout for Rhody's coming part of the time. At least he watches him go and stares after him long.

The hummers do not object to visitors at all.

As yet they have shown no antagonism toward each other. Even when one roosts momentarily on the others bill ,as often happens, no resentment seems to be aroused.

Their droppings are discharged so frequently and with such force that they can be heard striking the paper floor of the cage at a considerable distance. Inasmuch, also, as the act is performed without reference to the location of the other bird at the time, and both as yet, have failed to bathe, it may be wise to separate them for this reason, if for no other.

Weather "relapses"

About noon, skies stillclear, the north wind resumed, sending tempweratures down again, further delaying recovery from this unprecedented, long cold spell.

January 25th.

Sunrise revealed the heaviest white frost seen at this place, with minimum of 30 in the court. (White frost because humidity).

Humming-birds' narrow escape from death by ants.

Before I was up Julio had discovered the humming-bird cage, the birds' food and the birds themselves swarming with Argentine ants. The ants were in their eyes. Yet the birds were in the living room where only an occasional ant has ever been seen. He at one transferred the birds to another cage after removing the ants from them. They had apparently been unharmed. A narrow escape from this really serious menace to all bird life in this part of the country.

During the day the birds were placed in separate cages and the cages put on a stand with its legs standing in dishes of water. The ant scouts will presumably report to headquarters that the cages are inaccessible.

Columns of Argentine ants.

Later in the day, while verifying the presence of Rhody in his roost, I passed along the sidewalk at the street and I counted 42 (!) separate streams of Argentine ants crossing it , in a distance of less than 100 feet. Each stream contained ants going in both directions.

Calibration of Thermometer in Court.

For several days I have had three high-grade, etched stem thermometers fastened alongside the registering maximum and minimum thermometer in the court. These three thermometers agree with each other at all temperatures within the recent daily range, within a small fraction of a degree. A complete calibration has not been made, but within the limits of the daily range, it was found

Correction of thermometer readings in court.

that the max. and min. instrument shows 2 degrees lower than the three standard instruments. Therefore, as regards temperatures quoted in these notes during this cold periods, it is to be noted that those in the court should be raised 2 degrees.

Rhody and R5 were not observed extensively during the day, but at 1 P.M. I was in the inner cage watching R5, who could probably see Rhody sunning hinself down at the sage patch (because I could). At any rate R5 was interested in something in that direction and was wandering about in both cages to get a better look.

I "coke-coked" several times, and whether it was due to that or not I do not know, but I soon caught a glimpse of the end of Rhody's tail as he came up the bank, switching back and forth sidewise (a courting gesture not seen for several months). When he came into full view under the rhododendrons on the level, he began to search in the mulching about them, picked up and object and made straight for the mirror, just outside the wire where I stood, ignoring R5 who was now in the outer cage watching him and picking up pine needles, etc.

Arriving at the mirror,(it was seen that the "present" Rhody was carrying was an acorn) Rhody held it an inch or so from the glass, "champed" it with his bill, seemed to regard himself minutely, but without display of any kind, then dropped the acorn.

He waited there a minute or two, occasionally looking up at me, then picked up a twig and went to look at R5, dropping the twig before taking up,his station 2 feet from the wire near R5.

There he stood quietly for several minutes without sound or display, R5 however, immediately busying himself with pine needles, small stones, an acorn, some of which he carried to the wire and dropped as near to R as he could get. He also reached through the wire toward Rhody and pulled at a small rock-plant growing there. All of this seemed to be for Rhody's benefit but regarded by that bird dispassionately. Rhody finally bolted back to the sage and R5 watched him go, so it seemed to me, with rgret, and continued to look for him for a long time. R booed once or twice on his way to the sage, but that was the only sound made by either bird during the episode.

When I went down to Rhody he cried and muttered, but did not want the mouse offered him. (He had had meat an hour earlier).

Thus far it will appear that R5 is much more interested in R than R is in him.

R5 is a remarkably quiet bird--every sound that I have heard him make has been recorded in these notes.

He still refuses to eat butcher's neat.

January 26th.

(Minimum in court during night 37- corrected temp.)

At 10 A.M. rain began to fall. At this time Rhody was not in his roost, but when I searched through the bushes, he came out for his mouse, looking very meek.

At 2 P.M. this was repeated.

The hummers behaved normally throughout the day. At the M.V.Z. I was informed that an Anna hummer recently weighed by Dr. Miller, registered 3.9 grammes. My birds are eating more than half the contents of their 8 cc. vials, each--one a little more than the other--in 24 hours. Say 5 cc. each, or if it were water: 5 gm. each; but the mixture is undoubtedly heavier than water; further

they drink water in addition almost as often as they eat. Therefore it is evident that their daily intake of food and water exceeds by a considerable margin the weight of the hummer weighed by Dr. Miller--in 24 hours.

R5 had his 2 mice today, but as far as known was not visited by Rhody, probably on account of the rain.

January 27th.

Fair, mild and sunny. The wild birds, inthis morning, are much more evident than they have been recently; linnets and thrashers singing: Much wandering song by Brownie.

Hummers.

I have not been able to rig up bathing facilities for the hummers acceptable to them, though from their actions, I judge the y want to bathe.

As a substitute, I gave them each a shower with an atomizer. They seemed party to like and to dislike the operation. To my surprise, instead of preening afterwards, they sat quietly, though they fluttered vigorously in the spray.

The smaller bird, for the first time, ate more than the larger During the last 24 hour period each ate somewhat over 5 cc., by actual measurement, more precisely: that quantity disappeared from each of the food containers ; some of it, probably only a minute quantity, was wiped off on the perches. While water consumption was not measured, judged by the frequency of drinking, it was at least equal to the food consumption.

There was a chilly wind during the day from the south. This caused Rhody to occupy sheltered spots in the thicket of the west lot most of the time. He was fed there twice: once a mouse and once hamburger.

R5 had his, now, regular two mice.

Rain began about 6 P.M.

January 28th.

Heavy rain during the night and a sharp hail-storm, with thunder and lightning, about 7:15 A.M., lasting perhaps a minute.

At 9 A.M. (Temp. in court 42) Brownie and other thrasher(s) singing loudly west and north of house and climbing up the pine trees performing mysterious evolutions.

Rhody was not in his roost and was not to be found after a search through the brush of the west lot, until as I reached his roosting tree, a backward glance showed him following behind me, dry, bright and alert. A soft whine followed by a short mutter preceded his gobbling from hand a huge piece of hamburger with the greatest ease.

It is strange that Rhody's attitude toward me as a food purveyor, at the moment of taking the food from me, still exhibits more "wildness" when it is a mouse offered than when it is meat.

At 10 A.M. Brownie, now at the oval lawn, was most anxious for worms, and while taking them from hand, kept up a continuous conversation with Nova in plain view 15 or 20 feet away. Nova is very "sot" in her ways and is no tamer than when first seen.

Shortly before, I went in to see R5, standing with him about two feet over my head. He looked down at me and cooed three times

so softly that, if I had not been looking up at him and seen the movements of his throat, I perhaps should not have heard him at all.

Rhody using house in daytime to get out of rain.

12 M. At 11:30 I went down, during a lull in the heavy rain, to see what Rhody was doing about it, and was pleased to see that he had had the good sense to go up into his roosting tree and sit in the house made for him, where he was well protected.

At 1:30 he was still in his house.

At 3:15 ditto.

At 4 P.M. Rhody was still in his house, lying down with tail supported against the back inside in conformity to the design. He evidently was finished for the day and would not come down for a mouse.

January 29th.

Mrs. Kelly, Mrs. Tillotson (at whose home in Berkeley there is at present a Harris sparrow) and Mr. Gilbert (of Portland) are to come about 10 A.M. to see Rhody et al. My task is to find the creature and keep him interested until they come and then induce him to come into their presence--the latter perhaps an inpossibility in view of his fear of strangers, especially women.

9:30 A.M. I found Rhody in the Scamell oak, by "ear". Mrs. Scamell had seen him at his post earlier, cooed, and he had gone over to investigate and return the compliment. He sang for me and, again, in his first two coos I heard that peculiar, nasal overtone commented upon previously. He was still in the oak when the party arrived, but when I went out to contact him again, he could not be found. I made two separate searches for him. The last time, found him again in the oak, but he came down and ran across to the west lot.

The visitors were stationed in their car in the driveway west of the living room and I undertook to locate Rhody again and induce him to come over the fence and up the driveway to the car; and so it worked out.

He was suspicious of the car and its occupants, but came nevertheless to within about 20 feet of it, where he balked and rattled-booed twice, but stood his ground. I tossed worms, which he caught. He would not take meat from hand, but advanced to take the mouse from the ground by my side and ran off with it quickly. He behaved well under considerable stress of circumstances.

It shortly began to rain, and my visitors were told that he might go to his house in the tree for protection. Accordingly we went there a: Based on past experience, the chances were much against his being there, yet, as I was pointing out the house and explaining his method of approaching it, one of the party exclaimed:"Why, there he is, in it now!" And so he was.

Brownie was away all this time and did not show up until a half hour after the visitors left, announcing his presence by loud calls from the old oak.

Rhody was not looked up again until 4:15 P.M. He was found at the ladder tree, ready to go to roost, but changed his mind at once on being shown a mouse. He entered his roost at 4:37. I waited to see if he would go to the house, expecting he would

certainly do so when the shower that was seen approaching finally arrived. A sharp flurry of hail left him unmoved, so, being unprotected myself, I left him to his own devices.

Humming-bird food

Mr. Eric Kinsey, who keeps humming-birds in captivity at his place in Manor, on inquiry last night at the Cooper Club, said that he uses :

1 teaspoonful honey,
1 " condensed milk,
1 " Mellin's food,
1/3 cup of hot water.

Further he says it is absolutely essential for their well-being to give them "Vinegar flies" (Drosophila sp?). These he allows to fly about in their cage, which is of glass.

Inquiry at the M.V.Z. this afternoon elicited the information that the Genetics Dept. at Hilgard reared these insects in quantity Application there resulted in Mr. Ernest Jund's giving me cultures of Drosophila molangaster. One, the wild form found around wine vats and the other a variant thereof with vestigial wings and incapable of flight. The problem now becomes:How to feed them to the hummers. (They call the one with vestigial wings "Vg").

Mr. Kinsey's mixture is much more dilute than the one I was using.

About 4:30 P.M. the hummers' vials were cleaned out and refilled with food according to the Kinsey formula.

It is anticipated that they will eat more of this and drink less water.

This was a day of bright sunshine alternating with rain and hail. Temperatures of the order of 40 min. and 52 max.

January 30th.

Up to noon time, a day like yesterday with everything steaming during the sunny periods.

A half hour search for Rhody, beginning about 11 A.M., ended by finding him at the cage looking at R5, who stood but a few feet from him. Neither bird was showing any excitement. Rhody at once lost interest in R5 and came to me for a mouse, then went to the sage patch to sun himself.

I went there to watch his behavior and Brownie, who had been rather persistent during the morning in looking me up for worms, soon appeared. Wrentits were scolding Rhody and the two kinds of towhees were watching him. He and B were often as close together as 4 or 5 feet, but showed little concern about the others presence

When I left I spoke to R and he cried, then followed me to the tool house for a second mouse. This time he did not go to the shop-yard first, but came to the tool-house door directly.

At 1:30 Rhody was again found at the cage, standing in front of the mirror watching R5 who was on the floor of the cage picking up and dropping various objects. I went inside to watch. It appears that R5's interest in R is sufficient to make him even less concerned by my presence in the cage than usual. Both birds were rhythmically raising and lowering crest and tail; both silent. Except for the presence of the wire excluding Rhody, we formed a fairly compact group and it was easy to observe the slightest

details of behavior. Unfortunately these ideal conditions were disturbed by the arrival of another person and Rhody immediately sought concealment.

As anticipated in connection with the hummers, dilution of the food mixture caused the birds to eat more of it, so that, at noon, there was less remaining in their vials than there has usually been at 5 P.M. Again the smaller bird had eaten more than the other, or about 7 cc. in 19 hours, of which $13\frac{3}{4}$ hours were hours of the night. Correspondingly there appeared to be adecrease in the consumption of water, though it was not measured.

A Vf (vinegar fly) was floated on the surface of the drinking water of each bird where it could not help being seen, early in the forenoon, but up to 2 P.M., had hot been touched.

At 2:15 R was not at the cage, nor was he to be seen anywhere near it, but, as I walked along a path in the orchard, I became aware of something coming up behind me rapidly--Rhody of course, really running purposefully with the clear intention of not being overlooked. I stopped and held out a huge piece of hamburger, so big that it did not seem possible for him to dispose of it in one piece. It seemed at first that he thought so too, for, after taking it with gentle ooks, he laid it down and looked at it doubtfully. However, he finally picked it up by one end and it went down as quickly as one could say "knife". Back-sunning was then next in order.

January 31st.

About 8:30 A.M. (bright and sunny) Rhody could be heard singing somewhere. Later Julio informed me it was near the sage at the glade, and that he wanted no mouse.

I found him there at 9 sunning his back. He whined in greeting but showed no interest in food. When talked to, he muttered softly two or three times.

Here appears to be an example of his greeting me with a recognition call (whine) in no way coupled with a desire for food.

I now went into the cage to see R5 (also sunning his back). He greeted me with a low hroo_. He has never whined for me. I coke-coked and coo-cooed without interesting him, but Rhody, still by the sagebrush, immediately rattle-booed sonorously. R5, who had ignored my counterfeit efforts, evidently recognized the "real goods", came quickly down from his roost, ran to the outer cage, mounted to a high perch and stared off in Rhody's direction, but made no call. Waiting 2 or 3 minutes brought no results, so I left them as they were.

At 2:15 P.M. I saw Rhody at the cage watching R5. As soon as he saw me approaching, he revised his plan and came to me. We then went to the tool-house for a mouse. He followed to the door, but then changed his course to the shop-yard and watched me through the window, joining me at the door when he saw I had caught the mouse.

Now followed (for the first time this season) another step in the development of his courting behavior. (Singing was the first stage, Jan.3.)

He seemed undetermined as to what to do with the mouse. Appeared to consider his next step. He now began to wag his tail sidewise; then bowed and hrooed. Now he needed some objective toward which to direct his next move. This proved to be the general vicinity of the cage. R5 was now in the outer portion watching interestedly. R advanced toward him slowly and hesitatingly.

Manifestly with no clearly defined purpose controlling his actions. Abouty 20 feet from the cage he stopped, "thought" about it and gobbled the mouse himself. It was not offered to R5. But the reproductive impulse is stirring and getting stronger. Soon, I suppose, it will be in full swing: wider wanderings, climbing to roofs and chimneys with and without food offerings, full song, etc. It is fascinating to see the unfolding of the well-known pattern with the advance of the season.

As a concomitant, there is a gradual decrease in the use of his post on the west lot and earlier rising time. Perhaps the recent increase in food-intake is also a part of the picture. Certainly the bringing of objects to the mirror, lately taken up again but without display or vocal accompaniment as yet, is a sign of renewed sexual awakening.

Although his interest in R5 is not at all keen, it doubtless is a contributing factor in drawing him away from the west lot and taking him to the cage again after such a long period of almost total avoidance.

At 5 P.M. Rhody was not in his roost and had not been seen since last onbservation recorded.

The hummers eat not less than twice as much of the new mixture as of the old. Theydid not take the Vfs.

Brownie sang much during the forenoon, though intermittently, and wandered about a lot. Now that the ground is soft, his bill is chronically smeared with earth from his digging operations. He maintains contact with Nova much of the time, though occasionally he appears to lose her.

February 1st.

A strong south-east wind presaging arrival of another rain. Most birds sought cover out of the wind.

Rhody could not be found after a couple of searches, until about noon, when he came, in response to call, out of the chaparral outside the north-west corner of the property. His only greeting was one low mutter. He took meat without snatching for it or retreating.

I did not try to keep in touch with him during the rest of the day, further than to note that he was not in his regular roost as late as 5 P.M.

Brownie appeared once for worms.
R5 wanted only one mouse today. (Effect of increasing accumulation of mouse hair?)
No change with hummers.

February 2nd. (Sunrise 7:13, set 5:37). (Yesterday's temps of order of 52 max., 41 min.; alternating sun and rain).

At 9:15 A.M. Rhody was at his post on the west lot for a change--by the side of bush C. Although he cried on seeing me 80 feet away at the fence, the sound could not be heard at that distance. He was given a small mouse.

At 1:30, as I arrived about 100 feet from the cage, he and R5 were looking at each other calmly, about 4 or 5 feet apart, separated by the wire. I hoped to observe thier actions witnout disturbing them, but when Rhody caught sight of me, he instantly forgot whatever it was he was doing, and ran to me quickly,

without being called, loitered about my feet looking up at me, then led the way to the tool-house, stopping every few feet for me to catch up, then running about me like a dog as if anxious not to be overlooked. I really had to be careful to avoid stepping on him. I have not seen him so animated and attentive to my movements on previous similar occasions.

As we approached the mousery, R still thought I should get them in the yard, so darted there, while I went to the tool-house; but he soon discovered his mistake. I selected a very large mouse for him- one that taxed even his swallowing powers, for he had difficulty in getting its hind-quarters past the corners of his mouth. This time there was no thought of using it as a lure for another bird--he wanted it himself--and that quickly.

At 2:35 I found him in the orchard. He cried on seeing me. (At 1:30 he did not). He wanted another mouse only an hour and a quarter after eating the big one, and disposed of it with despatch.

As he was fed but once yesterday, his hunger today may be an indication that he did not forage yesterday at all--at least successfully.

At 4:35 he jumped across to his roost, having taken only a minute or two to pass through the ladder tree as he was frightened by 5 persons who were examining the property. They all saw him make his last leap. A lady in the party was well acquainted with road-runners and told me of a fight she had witnessed in Arizona between a road-runner and a rattlesnake about 2 feet long. It lasted , she said 2(?) hours, but they had to leave without seeing the finish. As a curious coincidence, I had with me a copy of the pictorial monthly "Look" for March, not knowing its contents. When I reached the house and opened it, there was a photograph of a road-runner and a snake (said to be a rattlesnake) fighting!

February 3rd. (Temperatures this day were of the order of 45 min. 55 max. Increasing cloudiness).

Mr. S saw Rhody about 9 A.M. at his post, called to him and he responded with his spring song.

I looked for him several times during the forenoon without success and decided he was off on tour somewhere. (I have suspected a tendency on his part to cruise farther immediately after a day when he was unusually well fed).

At 2:45, while I was in the cage, I saw Rhody coming. He snatched up a billful of pine needles, carried them past R5 who was in the outer cage with me, and dropped them about 5 feet beyond R5 and near the wire, without once appearing to look at R5. He now sat quietly close to the wire, R5 pacing up and down nearby, much interested in R, who apparently ignored R5.

Rhody went to the mirror to take one glance at himself, then returned to his former post near me, where I gave him a mouse. He ate it without running away . I now had both birds in view close by, R within 3 feet sitting quietly and R5, 2 to 8 feet moving about composedly. This condition lasted about 15 minutes, then R left. There was no display by either bird, no vocal sounds uttered and nothing interpretable (by me, at least) as throwing any light upon R5's sex.

Rhody "still" is the heavier and larger bird. This is true especially as regards head and beak. R5, though of course it is too much to expect one to carry indefinitely an accurate image in ones mind of Archie and Terry, seems much like them, and it may be that he is a yearling, not yet fully mature. He has not sung

or koke-koked as yet.

I could not find Rhody at or near his roost at 4:30, but ~~when~~, in looking along my back trail expecting to see that he was the author of the rustling sound behind me, I was surprised to see that it was Brownie following me. He climbed up one of the bushes in order to get a clear take-off to reach my hand.

At 5 P.M. Rhody was still not in his roost.
Up to this time R5 had eaten nothing during the day.

February 4th.

A strong southerly gale arose during the night, with a little rain.

11:10 A.M. Rhody is at present 15 feet from me outside the open Window where we can see each other plainly. He does not object to the sound of this machine, but does not like the sound of the wind in the trees. As I stepped out of the French window into the court at 9:45, I was surprised to see him almost under foot looking extraordinarily meek and subdued. Although this court is exposed to the full blast of the sou'easter, he had discovered a comparatively windless spot in the back-wash from the house.

I offered him meat, touching his bill with it, but he would have none of it, merely rolling his eyes and looking miserable. I invited him into the warm room, tempting him with meat and mice. He preferred to remain uncomfortable. After about 10 minutes he took the mouse, killed it and abandoned it. After another ten minutes he ate it.

11:20. Rhody is still here and has moved into the cloister. There is nothing "cocky" about him at all now! I can't get him to come in here. He looks as if he had no friends. He is not far enough in the cloister to avoid the rain. His bedraggled tail rests in a shallow pool and the rain hangs in drops on his eyelashes. 2 feet more to his left and he will be where it is perfectly dry. In front of him is an open door to the interior of the laboratory, where he could be undisturbed and in complete comfort. Strange creature! He does not move for many minutes at a time.

I wonder if the hawk that I saw dashing in and out of the bushes and trees of the west lot at 5 P.M. yesterday has cowed R.

R5, who would not eat anything yesterday, had eaten his mouse when I went into the cage at 11:45. Yesterday several trucks were dumping earth and rocks in the next lot and making a tremendous uproar behind the cage--sometimes as close as ten feet from it. This kept R5 disturbed all day, though not in panic.

11:50 Rhody still here, now on a rock about 35 feet away, sitting quietly, just outside the cloister in another calm spot. There are of course, bushes in the court which provide additional protection from the wind.

11:57. He has moved out of sight.
11:59. On a window-sill of the laboratory.
12:03. Off the sill to the ground below. I open the window; he moves off 3 feet to stump of oak.
12:07 Moves ten feet to rhododendrons by office door. I open door. He does not move away. Raining hard.
12:24 Rhody accepted none of the refuges offered, and is now under the oaks and rhododendrons by the tool house. Just across the driveway from him is the bench under
wh

which he used to sit often during rainy weather last winter.

12:34. He is now on the cross-piece under that bench, out of the rain but not out of the wind entirely. A little further along is the shelter on the ground under the old oak. If he goes there, as he used to, he will be out of both wind and rain.

1:25. Still under the bench with his feathers blown the "wrong way". He wanted no meat.

2:35. No change whatever from note of 1:25, as to Rhody. R5 shifted his yesterday's attitude toward mice and has had three today already. He is dry and comfortable in his cage, whereas Rhody, with the shop, tool-house , laboratory and this room freely offered him, insists upon being miserable.

3:05. Rhody still in the same place ; raining heavily still with strong southerly wind.

3:45 Gone without eating the meat that I placed beside him on the cross-piece.

Rhody retires to his house in the roost tree at 3:30 (Julio).

5:00 As I was starting my car in order to go down and see if Rhody was occupying his house in the roost tree, Julio who is intensely interested in Rhody and extremely fond of him, intercepted me--having divined my intentions--to tell me that Rhody had gone up into his house at 3:30 and was "way inside".

Here we have an example of Rhody's behavior on a nasty,wet day, and while the situation is complicated somewhat by the fact that he had had all the food he wanted, it is probable that the early retirement was induced, in part if not entirely, by the weather conditions.

Hummers.

The humming-birds seem to be thriving; the smaller continuing to eat more than his fellow. They are not quite so fearless as at first; perhaps now that they no longer have the stress of weather to overcome and have counteracted the effects of semi-starvation, they have become more conscious of other dangers. (Temperatures this day of order of 45 min. 56 max.).

February 5th. Day of Notable Developments in Road-runner World.

Bright from sunrise until 10 A.M., then increasing cloudiness

At 9:30 A.M. Rhody, in the west lot, saw me first and was already headed for me when I saw him. He flew over the fence, evidently expecting a mouse instead of the meat offered, for he eyed it keenly without advancing to take it, looking first at it then at me. This kept up for a minute or two, then he cried; but I had no mouse for him, so he took the meat.

R "wing-slaps"

Brings twig to mirror, ignoring R5.

At 10:45 R5 showed by his actions that he saw Rhody coming. I then saw Rhody taking a drink at the glade. I cooed, koke-koked etc. He responded by making his funny backward wing-slap and marching a few steps forward stiff-leggedly, ducking his head in time with his wing slap: one duck for each two slaps. He went down the driveway nearly to the entrance, chnged his mind, picked up a twig, carried it to the mirror, ignoring R5 entirely, pressed it against the glass and dropped it, all without display of any kind.

Goes to nest 2-36.

He now went over the fence to the north, running directly toward the tree in which he built Nest 2-36 last year, climbed to the nest without hesitation. I climbed laboriously over the fence

Works a little in nest 2-36.
Suddenly vanishes
Cannot be found.

went to the tree and stood near the nest. Rhodhy was standing on the rim examining it. He now shifted a few twigs and sat in it. In 5 minutes he came down and stood in plain sight in the open, 15 feet from me. I looked at my watch: 11:05. On looking up R had disappeared utterly, without sound and without my having had any sense of a moving object anywhere. Except for a few widely scattered bushes, the ground is open in this vicinity. Nothing could be seen during a search of 5 minutes. I climbed back over the fence and continued the search, looking at each of the old nests. I widened the scope of the search, principally to the north and north east. I revisited all places previously examined. After 25 minutes I discovered no trace of him. R5 had also lost interest

Appears to have retained definite recollection of this nest.

Here we have an example of a road-runner showing interest in one of his old nests at the beginning of a new nesting season. From the directness of his action and precision of his movements, it would appear that he retained a definite recollection of the existence of this nest and its exact location, and acted with purpose.

His sudden disappearance again illustrates the perfection with which he blends into his surroundings.

R finds me.
Follows me.
Boos.
Shows indecision.

At 1:40 I was preparing to burn a pile of trimmings in the Clearing when there was a soft frou-frou and Rhody suddenly appeared on top of the fence. I invited him to follow to the tool-house for a mouse, which he did enthusiastically, keeping abreast of me most of the time in the shrubbery. For some reason he has lately done this instead of following in the open road. He stopped to rattle-boo twice en route--why, I do not know. When we came to the point where he had to make his decision between the open door of the tool house and the open gate of the shop-yard, he chose the latter first, then the former; and when I was getting the mouse alternated between the two, first looking in at me through the door then through the window which opens into the yard. Again he tapped on the window when I held the mouse near it, but quickly came to the door when I moved in that direction.

Performs mouse-ritual.
Rhody offers mouse to R5 with full honors!

I had momentarily forgotten about his mouse-ritual and was somewhat surprised to see him perform it and head at once for the cage in no uncertain manner. R5 was outside in the outer cage and Rhody went to him at once (as close as he could get) bowed profoundly, hrooed and wagged his tail sidewise offering the mouse. This is the ~~full~~ mouse-courting gesture used with Circe and once with Terry when released.

Much in earnest.

He repeated this many times, moving about to keep close to R5, who seemed perplexed as to what it all meant. There can be little doubt that this was a definite, clean-cut attempt to establish close relations of some kind with R5. (Now what is R5?)

Offers mouse to mirror.
Back to R5.

This kept up for several minutes, interrupted once by R's going to the mirror and presenting the mouse there with full ritual. (The first this season). Now back again to R5 who was much interested, but still uncertain what it was all about.

Eats mouse.

Rhody now determined that his behavior produced no satisfactory results, so went to the east side of the cage (where R5 could not see him) and ate the mouse.

R5 whines to me for first time.

I now turned my attention to R5 more closely. He was in the sleeping place made for A and T (shown on P.1042). When I spoke to him he (for the first time) lowered his head and gave the pleading whine of R, A and T. I talked to him and he repeated it many times.

Rhody goes to nest 4-36.

Rhody had now disappeared, but was found behind the cage. He came out directly to me and stood beside me for a few moments, then headed for the "Dormitory Tree" where he had started Nest 4-36 in the glass house last year. He went directly up into the

Works and cries in nest 4-36 15 minutes.

house and began to examine the nest, crying as I approached. He stayed there 15 minutes (until 2:20 P.M.), part of the time rearranging twigs, part of the time sitting quietly in it and frequently crying. (I had no ladder handy, so could not offer him twigs).

R5' behavior.

For the next ten minutes he occupied himself with visits to the cage, passing around to the rear to move from one end to the other, sitting by the mirror and resting. During this time R5 tried to keep him in view and frequently picked up pine-needles, stones and pulled at branches. R, at times acted as if afraid of R5.

Rhody retires.

R5 watches him.

At 2:30 R came and stood beside me a few moments, thence to the glade, thence to a small rock by the pine on the lower road (about 40 or 50 yards from the cage) there to preen. R5 could see him there through a narrow vista between trees and kept watch of him.

R disappears.

R found with difficulty.

At 2:45 Rhody was startled by Julio's coming upon him suddenly bearing garden tools and stepped into the bushes. We searched for him 10 minutes. At last I found him in perfectly plain view (if one looked in the right place) only 7 feet from his rock! He was perfectly at ease in a baccharis bush, blending into it perfectly despite the fact that the bush was very open and scraggly. When one allows ones gaze to traverse along a row of bushes in which Rhody is sitting 5 or 6 feet away and happens to wink at the instant when his eyes are momentarily directed at the bird, he may miss him entirely.

In this last series of observations we have evidence of:

Further and rapid progress in Rhody's spring awakening as shown by intensified interest in R5 as a possible mate. (?)

And increasing desire to build nests.

R5's recognition of me as something to which to direct pleadings, and the probability of "his" being a female somewhat increased.

R retires to roost at 4.

At 4 P.M. (acco~~e~~rding to Julio) Rhody jumped from the ladder tree to his roost and did not go into his house.

Shifts to house as rain starts.

At 4:20 it began to rain for the first time today, so I went down to see if R had changed his mind about his final sleeping place, and found him tucked into his house as far as he could get.

New sound by R5.

At one time when I was in the cage with R5 and he was moving about, he made a series of very low clucking sounds, barely audible (Another first for him).

R5 ignores magpies.

It should have been recorded before, and it is still true: R5 pays no attention to the magpies.

Hummers.

The humming birds remain bright and active. Solution of Vf feeding not yet satisfactory.

Brownie and Nova.

B and N were about all day, B "finding" me wherever and whenever he chose. Also "found" Julio at R's roost tree.

Yesterday's storm.

The storm produced more than 2 inches of rain in 24 hours and the wind just across the Bay at the San Francisco airport reached a max. of 65 miles per hour. No wonder Rhody was meek and subdued.

February 6th.

Heavy rain during the night and the early forenoon, sun not coming out until about 3:30 P.M.

At 10:30 A.M. I called at the west fence (I could hear wren-tits scolding in the thicket of the west lot) and Rhody came out

and over the fence for his mouse.
At 1:30 P.M. this performance was repeated exactly--even to the wrentits. Thereafter R went to his post on the edge of the lot.

Rhody remained on the west lot all day, not once coming to the cage. He had ceased all activities associated with the renewal of his breeding cycle.

It should have been noted that, during all of his activities yesterday he did not sing once.

February 7th.

9:30 A.M. (Bright and clear since sunrise). Rhody at this moment is singing from the roof of the observatory. This is the first instance, in the present cycle, of his having gone to an elevated point to sing; showing increasing intensity of his mating instinct. He went up there about 9 A.M., having been heard first at about 8:45, apparently headed in that direction. For the first quarter of an hour he did not coo at all, but uttered a resonant series of rattle-boos instead.

I went out at that stage of his activities to note effect upon R5, finding him keenly aware of R's presence and, apparently, exact location, as evidenced by the direction of his gaze and locatin in the cage. It is possible that he could catch a glimpse of him through the foliage, but not certain.

When R gave his first coo-song from the tower, R5 reacted at once, dropping to the ground and running to the perch nearest to R, where he listened keenly, with crest raised and colors displayed.

9:45, R still up there.

9:48. He is at the cage offering a twig to R5, through the wire. Both are bowing with sidewise tail-waggings.

Courting Activities of Rhody from 11:53 to 10:37.

This entry, written at 10:43, covers activities of Rhody during the above period. The times above are accurate; but all intermediate records of times and intervals are subject to considerable error, since the action was so rapid I did not have time to make a note of them.

At 9:53 I found Rhody sitting quietly about 20 feet from the cage, R5 inside at nearest point to R. R was now interested in me and followed to the tool-house for a mouse, first going to the window to watch me catch it. This time he did not wait there until he saw me start for the door of the tool-house, but anticipated my movement, and was there first.

He took the mouse, with full ritual, and then, as I had hoped, started at once for the cage, where R5 was waiting in the outer portion. (This bird is now so accustomed to my doings that he tolerates my goings and comings without much concern. For example: I can now go in and out of the outer cage when he is in it without causing him to depart, and he behaves naturally while I am near him. This makes it easy to watch action between R and him).

I beat Rhody to the cage and stood outside near R5. R came to the wire not over 3 feet from me, bowed, hrooed, tail-wagged for R5. He was much in earnest about it, with raised crest fully spread, so that I could look down at him and see the bare skin at the base of the feathers; skin patch drawn taught and all colors vivid. He wanted R5 to have that mouse! He even pressed it against

the wire. R5 moved close to him, bowed, hrooed and tail-wagged, but did not reach for the mouse. He seemed not to comprehend just what was expected of him! This action kept up for a minute or two. R then tried the mirror with complete ritual. This brought no results. He came back to court R5 again. No results satisfactory to him. He now tried various inanimate objects in the vicinity. Next he went over the fence and approached nest 2-36 with ritual; he peered in all directions for a suitable candidate, wandering about a limited area.

R5 (who could not see him) now rattle-booed loudly in the cage R came back over the fence and to the cage, keeping up his ritual for the mirror and for R5. No results, so back over the fence again. I now shut R5 in the inner cage, opening the door of the outside cage hoping Rhody would go into it, and then I would let him in with R5 with his mouse. As R5 now was quiet, I "rattle-, booed", etc. from inside the cage. Rhody came back and walked about the roof of the cage. Discovering R5's presence in the upper annex, he pressed the mouse against the glass a foot from R5, who appeared but mildly interested. When R came down I tried to get him to come into the cage with me--a hopeless task.

He now went down the lower driveway off to the west. In a few minutes I went down and found him at his post with the mouse, still looking for customers. I now returned and went to the Clearing. R was there. I invited him to follow me up the road, back to the cage, and he did, to my surprise. (Perhaps he was going there anyway). I let R5 out into the outer cage, shutting the outer door. Rhody immediately resumed his courting of R5 with full intensity. Response being unsatisfactory, he now headed for nest 2-36 for the third time. (Meanwhile R5 had cried when I talked to him).

Rhody now went up into 2-36 with the mouse. After several minutes I followed. He was sitting in it, crying as I approached; the mouse was gone. R now worked at readjusting the fabric, still crying at intervals, once even with a twig in his bill with a quavering sound. He stayed in the nest for parhaps 5 minutes , then came down, composed and friendly, to sun his back in the lee of a low bank near the nest tree. I left him there.

If and when it seems advisable to get Rhody and R5 together, procedure will be altered. It can be done by withholding the mouse from Rhody until he comes into the outer cage for it.

I forgot to record that, when R approached R5 with the mouse, and was not performing his ritual, he made a series of low coots and that R5 now has begun to ook--the "embarassed" sound of Archie and Terry under similar conditions.

I did not look up Rhody again until 11:25; now it is 12:20.

Activities of Rhody, 11:25 to 12:15 (and R5)

When I stepped out of the door at 11:25, a rattle-boo announced Rhody's return to the roof of the observatory. I went to the outer cage, joining R5 who was in there, without disturbing him. He was on his perch looking and listening for R. After a few minutes I koke, koked. Whether my technique is improving, or whether my calling had anything to do with it or not I do not know; but R soon appeared at the cage, taking station at the wire and "peek-a-booing" from either side of a low chamise at the cage corner, at R5--now on the ground by me sunning his back composedly. R5 refused to get excited, so R turned his back to the sun also. Soon he darted off along the fence to the east in one of his rattle-booing circuses, thence over the fence to the nest tree,

but not going up into it. He came back over the fence again to the cage, then once more back to the tree. This time I went over too. As I approached he leaned out of the nest and began to cry. For 20 minutes he now worked rearranging twigs, building the S.W. wall higher and hollowing out the interior, pausing now and then to cry at me. At 12:05 he moved out to the end of the limb and rested; thence over the fence to the cage; back to sun 6 feet from me on the ground; back to the roof of the cage. I now went over the fence too and inside the cage. R5 cried when I went to him. Rhody wandered about the roof, looking in at R5, then down and off swiftly to sun himself near the cage. R5 watched him intently and called softly, hruh-hruh, hroo-o-o. This ended the present observation period.

Unfortunate location of nest 2-36.

I hope (and doubt) if this is Rhody's final choice for a nest. It is particularly unfortunate right now, because neighbors are starting to build a garden just back of the cage, and the route of the trucks carrying materials passes by the nest tree so closely that the trucks scrape through its branches not more than 2 feet from the nest. Further, this is a steep (at present soft) hillside and the trucks have already mired to the axles right at the tree. Their work is not done and the vicinity, when it is resumed will be in an uproar. This may cause R to shift his choice to one of the locations inside my property lines. I hope it does, for his protection, if for no other reason, because the tree is altogether too public.

Activities of Rhody, 1:30 to 2:55 P.M. (and R5).

At 1:30 Rhody was not in sight. I went over the fence and looked in nest 2-36 and the surrounding territory; then to the west lot, followed by another look through the territory immediately east of the east property line, by nest 1-36. I then returned to the cage. Glancing at my back track, I saw Rhody coming, apparently from where I had just been. He came to the cage, but when I left for the tool-house, he followed, this time waiting outside the door. He was given a mouse, almost black. Ritual followed and a march to the cage. However, he ate the mouse before getting there, then went to the wire to watch R5, quietly.

R5 had not eaten anything so far, and I thought the mouse put in his can was too big perhaps, so got him a smaller one and placed it on the ground at my feet in the outer cage where he was. He took it promptly, Rhody watching and moving nearer.

Both birds were very composed--there was no evident attraction between them, and no antagonism, both sunning themselves near me.

R now went up to the roof and stayed there for a half hour Part of the time R5 was 2 feet from him behind the glass. There was no demonstration; both birds preened and sunned, but R kept himself informed of R5's movements.

I now went to get another mouse for R5. On my way back, I was surprised to see Rhody, belatedly, on his way to the tool-house. He saw me, but decided to carry out the pattern of going all the way there, anyway, although I was part way back to the cage

He now followed me to the cage. I shut R5 in the inner one and opened the outer door to Rhody and invited him in. He would not come through the door and remained there stubbornly. I gave him the mouse, thinking that if he intended it for R5, he would come in; but he gobbled it without ceremony of any kind! (Three mice today so far).

He now disappeared. (To be found at 2:50 with the aid of the wrentits resting quietly in a bush near the glade).

R5 was proving very tractable and sat on his perch in the outer cage with me for a long time, occasionally cooing softly, looking in my direction and not in Rhody's.

A little later, when I was outside and he was still in the same place, Julio approached him carrying chairs. R5 did not move. Julio was instructed to remain there while I approached to see if he would stand (for the first time) two persons' presence. He did, quite unconcernedly. He is coming on. His growing confidence is helping these observations tremendously.

At 3:55 Rhody had begun his slow, intermittent march to his night roost and was still in the orchard.(Wrentits still scolding nearby). He followed his old route and dusted at his old place just outside the gate, although there was no dust there. He proceeded to his post on the west lot for a final back-sunning, then worked his way slowly through the brush toward his ladder tree. From where I stood in the Clearing, wrentits could be heard marking his progress. Brownie now appeared on the fence, having again "discovered" me. (Temp. in Clearing 56; sunny).

Brownie now (4:45) is singing continuous full-song from the old oak.

February 8th.

At 8:30 A.M., clear skies, no wind(Temp. in court 40). I found R5 lying on his "blanket" in one of the "arm-chair" sleeping places with tail flattened up against the back, looking too comfortable for words. He looked down upon me in a perfectly impersonal manner and was not interested in me at all.

Brownie was sunning in a bush; Rhody was not at his post, had not been heard and. I suppose, was still abed.

At 9:30 I went to the cage. Brownie came too to levy tribute. Rhody was there paying no attention to R5, who was sunning his back in the upper annex of the cage, not interested in anything else.

Rhody now had to work on his feet, one at a time. Like all road-runners of my acquaintance, he is no good at standing on one leg: he wabbles and falls over and has to save himself by putting the other foot down quickly. He then works on it there, but can only get at the upper surface and the claws. The "sole" is inaccessible; so he raises that foot, spreads the toes wide and pecks ineffectively at the under surface shakily, only to abandon the attempt as he is about to step on his own bill in the act of preserving his equilibrium. (I had to laugh in his face). As if to "save face" he discovers that there is an interesting fragment of something or other on the ground and picks it up. It proves inadequate to save the occasion, so, after all, it is the scales on his "ankles" that really need attention. He nibbles at them, accomplishing nothing that I can discern and then tries the other foot. All this with the utmost solemnity.

As has been observed before, road-runner feet seem to need fairly frequent attention, because, as also recorded previously, the pads on the toes are surprising soft considering their use.

Rhody now abandoned his pedicuring and shifted to a sunny spot near the mirror. A leaf now attracted his attention. He picked it up and pressed it against the mirror without display, then trotted east along the fence, headed for nest 2-36, changed his

mind and fell to sunning his back on the warm slope. (The trucks are not working there yet).

At the moment Rhody seems to be beset by a flock of uncoordinated impulses, that he himself can not clearly disentangle.

On this occasion he wanted no food of any kind--though I judged by his behavior- and not by trial.

10:25. Rhody still on the slope, but had eaten meat at the cage in the meantime.

R5 sunning his back in the upper annex.

11:45. No change from last entry, except that the birds have shifted slightly. There has been no sound heard from either.

At 12:10 I made my next visit to the cage. Rhody was just leaving for the sage patch to sun himself, apparently having just come from nest 4;36. R5 was in the outer cage watching R . Soon R5 put on a circus performance all about the cage with rattle-boo accompaniment--his first exhibition of the kind.

Rhody now walked down the driveway toward the entrance. When I rattle-booed he stopped abruptly and listened, trying to locate the "bird"(?). He resumed his march, finally ending up in a pyracantha at the Fish place to the south. A house is being built next door to it, and I could hear workmen commenting upon seeing the "Chaparral Cock again."

During this episode R wanted nothing from me and only "muttered" when I talked to him.

I had little opportunity of contacting the birds again until about 2:45. R5 then showed so much interest in my movements (such as the act of pulling a watch out of my pocket) that it was quite evident that he was now prepared to give favorable consideration to another mouse; so I got one for him, put it on a perch at arm's length and he took it there without show of fear.

Rhody was not to be seen in the neighborhood of the cage and I did not look for him again until about 3:30, finding him at his west-lot post. He came over the fence promptly for his mouse. Brownie, who lately has spent much time on the west lot, saw what was happening, and also came over the fence: for worms.

February 9th.

Clear all day, strong north wind for first few hours after sunrise.

About 11 A.M. Rhody was on the slope near nest 2:36, doing nothing. About 11:30 he came for a look at R5 in the cage, without display, and then to the sage patch to sun. There he spied a good twig and took it to the mirror, then north over the fence and placed it carefully in 2-36; worked there for a time, then came down to sun. The Japanese gardener who is going to build the garden at my neighbor's was nearby and I called him over to show him Rhody and the nest, explaining who Rhody is, what he is doing, the interest of the neighborhood in him and our desire to protect him, soliciting his cooperation in that effort. This he promised.

I thought it was best to take this course rather than to have the man discover Rhody himself, as he inevitably would, and perhaps add him to his bill of fare. At the same time it was desirable to have him realize that I "owned" the bird, as a further deterrent to the exercise of any ambitions with respect to Rhody which the Japanese might later develop.

At about 2 P.M. Rhody was still sitting on the ground near the nest. I sat down 4 or 5 feet from him. He showed little interest. I pulled from a pocket the red, pasteboard box in which I transport mice to the place of sacrifice. R at once was much interested,

although he had no direct knowledge of what it contained. He watched attentively while I took off the cover and advanced without delay to take the mouse as soon as he saw it. (As far as I know he had had no food as yet, and was presumably hungry).

However, he began his ritual immediately, made for the fence, went over, showed the mouse at the mirror with full display, then offered it to R5, who was now down on the ground at the wire. Rhody was more persistent in his endeavor to interest R5 than I had ever seen him before, but R5 was coy. Finally Rhody gave up and looked for other candidates. During the course of his wanderings I invited him into the cage, but he would not come. There was one period of about 10 minutes when he remained perfectly still but holding the mouse. He now went out into the street, over to the Scamell house, climbed to the roof and sat there until after 3 P.M. Not a sound from him (nor was he heard to coo all day). Finally he ate the mouse himself, sailed down to the street near me, then wandered off to his post on the west lot, probably finished for the day.

Later, still an hour to sunset, he was seen in his roost.

Thus far, it will be seen, that there is no conclusive evidence as to the sex of R5, nor, for that matter, does it appear that Rhody knows, himself. R5 has never been heard to "sing" or to use the koke, koke call made by Circe.

At the same time it is very clear that Rhody, as determined by his attitude towards them, regards R5 in an entirely different light--in the cage--than he did either Archie or Terry--in the cage. These birds, while in the cage, were never courted by R, though he addressed to them a peculiar call (described at the time) which he has not used with R5. Terry when released in the presence of Rhody with a mouse in his bill, was courted (or so I interpreted the action) once, and then no more (as far as I know). Archie was chased away. Therefore it appears that there is a distinction which R makes between the two "sets" of birds.

Of course we know that A and T were immature and were R's offspring. (Did Rhody?). I still think T was female and A male. R5 may be "anything".

If a guessing contest were held as to whether R5 is an adult or a bird born last year, my guess would be the latter. If the contest were based on sex, I would base my guess on the toss of a coin.

February 10th.

A cloudy and chilly day. Rhody spent much of the forenoon in the brush of the west lot, in tree 9, which he has not used much the last week.

12:25 P.M. I just found Rhody sitting in nest 2-36. When I left him and climbed back over the fence, he did not hesitate to follow by way of the roof of the bird cage. I continued toward the tool house. Rhody could not get there soon enough, rattle-booing en route (Now I wonder why). The big mouse offered him was gobbled without benefit of ritual of any kind --he had no time for love affairs--what he wanted was grub, and that without any monkey-business; let R5 look out for himself.

At 1:20 he was continuing his repose in a ceanothus by the fig tree, whence he had retired soon after eating.

A little earlier, Brownie was heard calling a couple of hundred yards off to the east at Robinson's and soon seen in the top of a pine tree. My Whistling his "purple, 1,2,3 " call started Nova

singing in her high pitched voice somewhere behind me. Brownie, perhaps on account of this double attraction, now made a long downhill glide to land near me and run the rest of the way. The worms received his attention before he went to look up Nova. He takes none of them to her.

I worked in the garden near Rhody and until 4 P.M. he remained in the ceanothus; he then started in the direction of his night roost. He had not sung all day and if he visited R5, I did not see it.

His remaining quietly in one spot for about 4 hours illustrates the ease with which road-runners can render their presence in any given habitat difficult to detect.

From 3:30 P.M. yesterday to the same time today the hummingbirds' consumption of the food mixture was measured.

"Big" (the adult)	consumed approximately	19 c.c.
"Little" (the immature one)	"	18 "

There is, of course the possibility that some of it was splashed away, but there was no evidence of it.

Also, as they wipe their bills frequently, some of it undoubtedly was dissipated in that way. With this weaker mixture the consumption of water is much less; corresponding probably to the increased intake of the weaker food.

February 11th.

Light rain in the night and at intervals throughout the day.

As I passed the roost tree at 10:30 A.M. Rhody was sitting in his house.

At 11:30 he was in the clearing, dry except for beads of moisture on his plumage which had not coalesced. Gave him meat.

As I drove past at 2:30 P.M. he was sitting at his post on the edge of the bank of the west lot.

At 3:30 P.M. he was stowed away in his house and would not yield to temptation in any form, but stuck there not interested in the slightest in any of my offerings.

As far as my observations went, this was a day of almost complete inactivity on his part.

February 12th.

Cloudy in the early morning with sun trying to break through. Rhody not in his house at 10 A.M. and not in sight.

I searched for him about 15 minutes beginning 10:30, but did not go into the brush of the west lot. The search ended at the sage-brush patch at the glade, where I stood looking off over the open field to the south . Glancing behind me, I discovered Rhody about 6 feet away walking up to me with a twig in his bill. He dropped it and whined. R5, from the cage 50 or 60 feet to the north now rattle-booed loudly, having been silent (as usual) all the morning. As his mouse was uneaten and Rhody plainly wanted one either to eat or to use as a love-token, it seemed a good time to try to get R to go into the cage, get a mouse there an see what happened. He followed me to the tool-house, expecting to get his mouse there, but I now went to the cage and he followed.

I was unable to induce him to follow me in; he merely stood stock-still looking at me. R5 had now retreated to one of the "arm-chair" roosts where he assumed sleeping posture and merely

gazed down at us dispassionately for a time, then rattle-booed once and began to"cry". It was impossible to tell whether he whined for Rhody or for me. It may be that this was really the first time that I have seen a road-runner address this call to another one.

I now gave Rhody the mouse outside at the open door, but he carried down to the sage away from the cage, returning later to present it at the mirror and other places while R5 still remained aloft. With R out of sight R5 would whine when I went into the cage.

After a half hour R took the mouse to nest 2-36. When he saw me approaching, he whined, then started work on the nest. He had eaten the mouse. I stayed there 5 or 10 minutes and he kept up his whining; but developed a new pattern, which was to whine (cry) and then follow it with soft beak-rattlings (mutterings). So his "conversation" during this period, for the first time, consisted of a succession of whines and rattles--reason for the change unknown. I left him there at 11:30.

On entering the cage again, R5 greeted me with whines and came down from his resting place.

At 12:30 I went out for a few minutes to note any happenings. When I entered the cage R5 came down in friendly manner and loafed around. Rhody was glimpsed for a few seconds running swiftly by the cage to the south-east, bill, neck, back and tail all in line, low to the ground, flowing over the irregular surface and adapting himself to the changing contour as flexibly as a lizard.

In a few moments he was back again, dropping a twig at the foot of the mirror without display or sound, then off to the north fence to run back and forth along it in circus display. I now "borrowed" R5's mouse and showed it to R through the wire. He came for it meekly and as he was about to reach for it, changed his mind and began to work on the feathers underneath his wings with the mouse clinging to the wire a foot from his breast. He now wandered off and I left.

At 1:20 I passed by the cage (just in time to see R5 gobbling his mouse), over the fence to nest 2-36, on to the east, then south outside this property and up the driveway, without seeing Rhody, until he came running from the north-east (where I had just been) toward the glade where he rattle-booed twice. I now went to the tool-house. R accepted the hint and followed. I gave him a very large white mouse which he accepted and downed without overtaxing himself, without ritual of any kind. He will probably now loaf for the rest of the day.

Still nobody knows the sex of R5! (Not even Rhody?)

4:15 P.M. Rhody is in the ceanothus where he stayed so long on the tenth. I looked for him there at 3:40, but did not see him, so went down to his roost tree and climbed the bank to make certain he was not there. Then retraced my steps . The wrentits were now scolding at the ceanothus (on the bank above the fig tree). I looked up into it carefully. All I could see was quail on the ground below the wrentits. I decided that the quail were the cause of the scolding, but, to make certain, now went up to the driveway where I could look down into the shrub. In a few moments, there was Rhody preening not three feet from where he sat so long on the tenth, with at least 95% of his form in perfectly plain sight. If he s should ever really try to conceal himself, he would be perfectly invisible! (Cloudy, mild).

4:30. He is still there. This time I saw him when 50 feet away, before I really looked for him.

At 4:35 he was down from his perch, apparently headed for his roost along the accustomed route, but

At 5:00 he had advanced but 40 feet in that direction and was listening toward all quarters. A chilly north-east wind was now coming over the eastern hills forming clouds at their summits as it came in contact with the warmer, moist air of the Bay region. I went in to get an overcoat, and on returning at 5:05, found Rhody had lost ten feet and seemed more anxious than before. I now preceded him to the side gate, calling to encourage him, and he followed. (He would have advanced along that route anyway eventually, so perhaps my leading had nothing to do with it. However, the renewal of his march nestward coincided in time with my taking the initiative. He now went through the gate first, omitting his usual dusting at the bench just beyond. I fòllowed. Instead of going out into the open street as usual, he kept to the growth on the bank, looking and listening. When he came to the end of the planting at the south west corner (See map, p.1313A) he stopped. I had passed him in the meantime, so went back. He now went [illegible] straight up the bank with extreme caution, stretching his neck upward as far as possible in order to peer over the brink and see if the "Open patch" was clear. Being satisfied, he proceeded north along the west fence, still hesitantly, until he reached the edge of the thicket, where he stopped and peered intently into it.

I now went up and joined him, as it was clear that he was undecided as to his next move. I then followed west along the margin urging him to trail behind me, which he did, occasionally stopping to study the thicket. When we reached a point directly south of tree 12, I said:"Now you are safe. Here's where you go in".

He was now at his regular point of entry, so naturally he did go in. At 5:21 he was in his roost. I waited to see if he would go into the house, but he did not during the few minutes I remained.

There can be no doubt of Rhody's having been afraid of something during this episode. Accipiters are here every day,and today raided the west lot as well as this place--once causing Brownie to drop hastily from the top of the old oak into the glade.

After leaving the side gate Rhody did not follow his usual route and showed extreme caution.

While, in a physical sense, he followed my lead when given the opportunity, there is some doubt as to whether he did it intentionally (or instinctively) as a measure of protection. At the same time, I believe my presence did, in some measure, serve to encourage him. Why not?

February 13th.

2:40 P.M. Raining ever since some time in the night; strong southerly winds, Temp.56).

I could not find Rhody any place during the forenoon. I had expected him to be either in his house in the roost tree or one of the shelters in the garden.

At 2:15 I got in my car (it was raining so hard) and parked at the curb near the roost tree. Rhody was in his house. The rain was streaming past in almost horizontal sheets. I lowered a window and called to him; he reacted at once by raising his head and trying to locate me. Another call and he stood up and faced me, then sailed down and ran toward me, skidding sidewise in the strong wind and rain, tail blown off to leeward, all windward feathers fluttering.

At the most, all he could see of me was my head above the window sill. I now showed him a large, white mouse; it dropped by accident on the running-board. (I had meant to open the door and see if he would take it from hand under these trying, new conditions). He advanced to the running board and hesitated, looking up at me inquiringly(?) It was a new experience for him, but he behaved wel

took the mouse and retreated up the bank with it, eating it beneath a bush. He did not return to the roost tree during the five minutes following.

February 14th.

The sun rose bright and clear; perhaps we shall have some respite from the disagreeable weather of the past few weeks, during which we have had an unprecedently long cold spell followed by an effort on the part of the weather to make up the deficiency in rain-fall all at once.

At 8:15, Rhody, clearly in response to the more favorable weather conditions, was at his post on the west lot. When I spoke to him from a distance of 25 yards, he at once bowed his head and began his full song. I had no food for him, so left him to his own devices.

At the same time Brownie was singing in the same vicinity.

(The following notes written at 5:45 P.M.

Rhody was not heard to sing again during the rest of the day. At about 9:30 I found him at the sage patch near the glade sunning. R5 was watching him from the outer cage.

I set up a motion picture camera directed at the mirror in order to "get" Rhody when, if and as he presented twigs and mice there, as he surely would do unless I were much mistaken.

Presence of other persons made him reluctant to do anything but sit in a tree or some other inconspicuous place nearby and preen, or else do nothing. Finally I took the camera off of the tripod and took a close-up of him preening at the glade. While replacing the camera, I lost him; but hearing the panes rattling at the glass house in the dormitory tree caused me to look up and find him working on the nest in the house. (He cried for more twigs). He gathered shade-killed twigs from the inside of the tree and worked for 5 minutes on nest 4-36. (Which is also now 2-37, or, say, 4-36/2-37). He also gathered up pine needles and old gladiolus leaves and headed for the mirror; but turned back when he saw me there with the camera blocking his direct route, and placed his load in the same nest.

He now brought a twig to the mirror after I stepped out of his way. (Short shot). This he tooh to nest 2-36 over the fence.

He took another twig there. He was absolutely ignoring R5, but came back to sun on top of the cage. I showed him a mouse, which he took to the mirror and I got a shot at him there.

Now followed a long loafing period at various comfortable points nearby. (Temp in court 63).

At 12:10 I offered him another mouse. After wandering about with it for some time, he offered it to R5, though not so enthusiastically as last time. I got both birds in this action on the film. (Though, on taking the film out, I discovered an error in threading that may vitiate results!). [illegible]

From this time until about 3 P.M. there was little action as Rhody loafed most of the time near the cage, giving little attention to R5. In fact both were rather indifferent to each other.

At about 3 P.M. Rhody went to work again in the glass house, gathering twigs from many points, R5 watching and occasionally "hrooing" softly. He worked for about 15 minutes, then spent a like period sitting quietly in the tree.

I sat with my feet resting on the rocks at the corner of the cage. (See photo.p.1135-A--the corner in the foreground with the low bush of chamise). Rhody now came and took station at my feet.

watching R5, who was at the inner corner trotting about and jumping up and down to and from the perch at the corner. Rhody tried to play peek-a-boo with him around the bush. R5 was coy and hrooed two or three times, deep in his throat, almost a rumbling sound, drawing his head back as if to deepen the pitch.

R5 was less active than R, by far. Rhody repeatedly went to the back of the cage appearing in front again at the other end. This was repeated many times, first in one direction and then in the other. Sometimes he would vary it by passing by in front between my feet and the cage. R5 would go from the corner near me to the upper annex. Their movements more or less synchronized. It seemed that when R found himself near R5, it was the signal for him to run to the other end of the cage. When R5 appeared there, R would leave for the other, or else run off to the east under the trees paralleling the fence, displaying, as if inviting R5 to follow. In fact the object of the action seemed to be just that.

About 4 P.M. Rhody got tired of this, ate a large piece of meat and left for the orchard, passing out of the side gate on the way to the street at exactly 4.

At 5P.M. I went out to see if he was in his roost. He was in position No. 1 in the ladder tree, in the sun, at 5:05.

At 5:25 he raised his head and appeared to be suddenly on guard He had been composed and quiet before.

At 5:25½ a male Cooper or a female Sharpshin (I do not know which) suddenly made a half circle about Rhody about 15 feet from him and only 5 or 6 feet higher, departing swiftly. R crouched momentarily and threafter until he jumped to his roost at 5:39 was very cautious. (Sunset 5:47, "official". As seen from the living room, by my watch: 5:48).

Mrs. Scamell says that there was a large dog roaming around through the bushes of the west lot on the 12th. This may have been one of the causes of R's show of fear on that day, in going to his roost.

February 14th.

At 9 A.M., bright and mild, R was at his post on the west lot. As I approached the fence at the Clearing a hawk (Cooper or Sharpshin)flew out of tree 8 . R saw it, reacted slightly as the hawk flew rapidly to the south.

When I called to Rhody he responded with "full song", but would not come. He sang 4 or 5 times and I left.

At 9:45 he was out in the very middle of the street sunning his back there! He shortly went to his post. Talking to him from a distance of 100 feet brought forth his song again. Finally he clapped his wings over his back and stalked off stiff-leggedly to a point where I could not see him and again sang. I then left.

12:15. Rhody is now on top of the Fish house with a mouse given him about 11:45 out in the field where he was catching living creatures of some kind. When he saw me approaching while he was still in the field, I could see him lowering his head and giving his whine, but could not hear him. He has not been heard to sing since last noted above.

A few minutes ago an Accipiter flew over him about 50 feet up. A momentary crouch was R's only reaction.

At 12:30 he was no longer there. Julio said he had come to the cage and offered the mouse to R5:"Tried to get it through the wire and Pepper (R5's other name) looked as if he wanted to eat it." I found Rhody in 2-36 at 12:40, without the mouse.

An hour later he was sunning on the ground near the tree.

He soon began to wander off to the north, climbing to the roofs of the Nichols' and the Reiter's homes, without calling. When he came down from the latter, a young lady came out and asked if she could help me in any way, such as heading him off. I explained that I was not trying to catch him, who he was, what he was doing at the time, etc. In the meantime he had not waited for me, so I lost him.

He was next seen again in the orchard at 4:15, about to start for his roost.

He arrived at Position No. 1 in the ladder tree at 4:37. I went away and returned at 5:10. He had progressed only as far as No.2. By 5:21½ he was in his roost. (Weather conditions today practically duplicated those of yesterday).

February 16th.

Rain threatening.

At 10 A.M. I found Rhody sitting in his house in the roost tree. (Dull).

12:25. Up to now I have not seen him again. The sun came out shortly after first observation.

R5 greeted me with a deep hroo when I went in and talked to him. He now comes to me and picks up meal-worms tossed upon the ground 4 or 5 feet from me. He makes no effort to catch them on the fly. Angle worms he will not touch. Small fragments of meat he will look at, reach for and then not take.

Pyracantha berries are occasionally picked up and dropped. He may eat some of them.

He remains indifferent to the magpies, though he can not help seeing them.

He put on two or three "circuses"this morning, apparently for the benefit of the towhees that were stealing the meat at the entrance of the cage.

4:00P.M. At 1:05 P.M., tinkling of glass from the direction of the glass house in the dormitory, as I was going to the cage, announced the presence there of Rhody working at his nest inside. R5 was in the outside cage aware of R's activities. Rhody now sailed down to discover what might be the possibilities in the mouse department. As R5 was presumably hungry, having eaten nothing during the morning (He would not touch the dead mouse put in the cage for him, and had been looking into the can) it seemed a good time to try bringing him and R together.

Accordingly I entered the cage with a mouse, Rhody following gingerly and stopping just inside the open door, then retreating without taking the mouse. R5 was in the outer cage at the time, but R seemed shy. He continued to watch from near the door. The mouse was now placed on the ground about 6 feet from me, in the hope that R would come in and get it; but R5 gobbled it instead!

I now gave R a mouse outside, which he took with ceremony at the wire, but R5 was not interested now and went up into the upper annex and sat in the "arm-chair" roost. Rhody abandoned efforts to interest him further temporarily and carried the mouse about aimlessly, hrooing occasionally, for about 15 minutes, when he made another attempt to interest R5 without success. He then went over the fence to the north and sat quietly near the nest tree for 20 minutes or so. Finally he went up to the nest, ate the mouse and immediately began to "cry" at me, though he had not been making that sound before entering.

I left him sitting there, now and then probing the bottom with

his bill.

I now went back into the cage. R5 leaned out from his couch and "cried" also--for the first time today. It was noticeable that his cry was thinner, higher pitched and more quavering than R's, giving the impression of juvenility.

Rhody appeared on the roof of the cage in a few minutes, went to have a look at R5 in his couch by the window (I think R5 cried at him, but am not certain) and then walked over to the dormitory tree, where he picked up assorted nesting material, decide on a certain weed stalk and carried it up and placed it in the nest in the glass house. After several minutes of quietude there, he came out for a 15 minute rest on the wind screen, then a longer one in the pine nearby.

R5 takes lizard from hand.

About 3 P.M. Julio brought a blue-bellied lizard he had caught. R5 was up in his retreat, but when I held the lizard at the wire and called, he came down and out promptly and with little hesitation, took the lizard from my fingers. This is the first act of the kind for him. The lizard was a stronger lure than a mouse. It was something in which he had specialized when free. It was also the first one that was offered him. Now it is a fact that he has never played with a mouse, yet this lizard immediately aroused that instinct which appears to be common to roadrunners when in possession of a mouse. Without killing it, he laid it on the ground, and went through precisely Rhody's standard performance with lizards: Walking around it; pretending to ignore it, but catching it as soon as it started to run and repeating ad lib. until ready to eat it. (I imagine that the scratchy scales felt good inside after the exclusive diet of fuzzy mice, and that they will help loosen up some of the mouse-hair lining of his gizzard!)

This lizard seemed to pep up Pepper (R5) for he was now full of life, even putting on a circus for the magpies who had crowded against their wire to watch the lizard.

Rhody now came down to observe at close range and walked back and forth along the wire, Pep showing interest and bowing and hrooing once close to R.

R now showed desire to enter the cage by the door; but he was not allowed to enter without bearing gifts. He came back and sat at the corner by my feet sunning his back and watching R5, who now sunned his back in front of R 10 feet away. There was no more excitement and R finally strolled away, and was found at his post in the west lot at 3:45, preening and "killing" a root which he had pulled out of the ground.

I should have mentioned also, that, during the foregoing action of R5's he had also "killed" a twig.

Rhody was not heard to sing all day.

February 17th.

The sun rose in a clear sky; no wind.

At 8:15 A.M. Rhody was not at his post.

At 8:20 " he was; but made no response to my calls other than to glance at me and look away indifferently.

At 9:15 he was sitting in the top of the bushes at tree 8, having left his post, apparently, to avoid the smoke from a bonfire across the street.

He came down and sang his "full song" a dozen times or so, then went down the bank to the street. He did not want worms, even when I went to him and touched the end of his bill with them. Now began a slow stroll up the street toward the entrance, and by 10:15 he was at the mirror with a tiny twig, pressing it against the glass, but without display. He now carried the twig toward

the dormitory tree. It was so small that I wondered if he would waste energy by taking it up to the nest instead of a larger one that would be worth his effort, and, as a matter of fact, he did exchange it for a big one, which he placed carefully, worked for 3 minutes and came out to rest 15 on the screen. There was now another person with me.

R came down, picked up another twig, ran past us, took it to the mirror, then over the fence to nest 2-36. (He is playing no favorites).

At 11 I went over and invited him to return, as I wanted to bring him and R5 together. He started back, but when I went to get a mouse, I lost track of him, and did not find him until 11:15, when he was back at his post on the west lot (150 yards away from 2-36) singing and preening alternately. He showed no interest in my invitation.

While in the vicinity of the cage, the two birds showed little interest in each other. R5 would not come down, but when Rhody went over the fence to 2-36, R5 rattle-booed sonorously, causing R to hesitate for a moment.

R5 (Pepper) takes mouse from hand.
He makes distinction in size of mice.

11:55. Pepper (i.e. R5) appears to have the same comception as to the proper size of mice as Rhody. A large white mouse has been in his can all morning. Twice I saw him go to the can and look at the mouse; once going down into it. The last time he did this I got him a smaller one of the same color and showed it to him from outside the cage. He came at once and took it from my fingers with no more hesitation than Rhody, and gave it no chance to e~~a~~scape as he did the lizard. Chalk up another "first" for Pepper.

I imagine that, like Rhody, he is more confident when I am on the other side of the wire, showing recognition of the wire as a barrier of some sort.

At 12:25 I was having luncheon in the cloister, the floor of which is level with the garden. Rhody suddenly appeared from nowhere and began crying as he ran toward me. I had not invited him and did not know he was around. He stood a few feet away and cried and cried. (This time I could see down his throat far enough to observe that he is not all "black" inside his mouth). Of course he wanted a mouse, so Julio went and got one, Rhody coming to the table for it. This is the first time that Rhody has come there and begged me for food--for that is just what he did. I had not fed him during the morning, so supposed that hunger was his ruling motive; but he took the mouse with ritual and trotted~~d~~ off. I went to the cage and found him displaying with it at the mirror, then returned to finish lunch.

His action in coming was so direct and purposeful that he probably knew where to find me; perhaps having been watching me without my knowledge.

At 12:50 he was sitting quietly by the wire of the cage holding the mouse. R5 was in the outer cage 9 feet away, also quiet. I do not know what happened in the interval.

About 15 minutes more of inaction and R moved toward the point where he usually goes over the fence to the north, so I went and stood there, causing him to change his mind. In a few minutes he ate the mouse, I moved away; he then carried out his original intention of going over to nest 2-36, to which he carried a twig.

In ten minutes he was home again and took a twig to 4-36. A visitor now came and sat with me near the cage. Rhody alternately worked in 4-36 and wandered about. For a time he sat on the cage roof and tried to free himself of a pellet, but without success.

At 2:45 I left him carrying nesting material to 4:36.

Freezing of R5 and Rhody.

At 3 P.M. Rhody was still working at 4-36 R5 was in the outer cage approaching me as if he expected food.

A sharpshin (or Cooper?) sailed over the top of the cage just clearing it. Both birds froze instantly in their tracks: Rhody, half way up to the glass house with a twig in his mouth, R5 on the ground in the outer cage.

A brilliant red delivery truck now sped up the driveway, 30 ft. from R5; 15 feet from R. Neither stirred. R5 was crouched, head pointed one way, tail the other; R tail hanging down, head on one side. Neither moved a muscle for 4 minutes. The truck, returning, caused each to move his head slightly and resume frozen posture. After 5 minutes, R5 hrooed softly, otherwise making no movement. After 9 minutes R5 thawed as Julio approached. R was still frozen. I went to him (he was at the level of my eyes). He moved his head slightly and was big-eyed and frightened. In 12 minutes he resumed his climb to the house and placed the twigs. (It was a bundle of them).

At 3:35 he was sitting quietly in the nest. R5, having refused a salamander was up in the extension.

Rhody and R5. Another attempt to get them together.

At 3:40, both birds appearing now "mouse-conscious", I essayed to get Rhody in the cage with a mouse, opening the outer door and crouching just inside, R5 behind me in the outer cage. Rhody came, took the mouse, ate it and sat on the door-sill. That spoiled this attempt. It was interesting to observe that R5, who really was hungry again, had designs on this same mouse, as he stole up behind me saying, ook,ook,ook, but lacked courage to make the last reach for it. By way of compensation he now went into the inner cage, got into the can and ate the mouse that he had been persistently refusing to take all day. When offered the opportunity that he wants so badly when there is no chance of getting it, Rhody fails to take advantage of it.

About 4 o'clock Rhody appeared finished for the day, fading away

There has been no more trucking in of earth at the garden back of the cage since it was first recorded. It will be unfortunate if Rhody determines to make 2-36 his real nest (assuming he gets a mate) and trucking be resumed at that time. On the other hand, now would be the best time while R is still undecided, because it might cause him to concentrate elsewhere permanently.

Today , I should say, Rhody distinctly favored 4-36.

February 18th.

Rain during the night but clearing at sunrise.

As I was going up the steps leading from the entrance driveway to the cage, on my first visit of the morning at 9:15 A.M., I became aware of a shadowy object to my left and rear. It resolved itself into Rhody carrying twigs, also headed for the steps. He carried his burden promptly up to his nest in 4-36. At 9:40, when I left to make this note, he was working diligently, carrying up approximately two twigs per minute. On one of his descents I offered him a mouse, which he looked at, but took up a twig instead

R5 was in the outer cage sunning and watching. When I approached him, he drew back his head and hrooed softly once without moving away.

He did not want a mouse. At the same time he showed that he is not afraid of the red pasteboard box in which I carry them.

At 10 P.M. Rhody was not working at 4-36. He was found crouch-

ed under a baccharis bush 15 feet north of the north fence, on his route to 2-36 tree. He was in one of his wooden, semi-frozen states, in which he will not respond to advances, ignores worms and appears mentally absent.

In about 20 minutes he thawed somewhat, crawled out and began to sun his back. He would now catch worms provided he did not have to reach more than a couple of inches for them. I went back over the fence and watched him from the south side. In a few minutes he hrooed softly, looked about and began to wrestle with weed stalks and look toward nest 2-36 when he had a billful. I wish to "wean" him from that nest (without using compulsion). I now tried, by talking to him and showing him the red box) to get him to come home; rather to my surprise, he dropped the twigs and came over via the roof of the cage.

I now tried to get him to come inside and take a mouse, but he preferred to go back to work on the nest in the glass house. That was something accomplished, even if not the direct objective.

He worked on the nest conscientiously for 35 minutes, then retired to the glade for a well earned rest. This was followed by more work on the same nest, then a rest.

At 11:50 I went out and found him at the nest again. About 12 o'clock he came to the cage where I was sitting. The time now seemed ripe to make the Great Experiment: Rhody apparently in receptive mood, Pepper, mouseless, and occasionally looking into his can for the one I had removed.

Rhody and Pepper in the Cage Together.

I opened the cage door and put a mouse on the ground. Rhody came in promptly, took it wnd began his ritual, bowing toward various points of the compass and showing no desire to leave the cage. R5 was up in the upper portion of the inner cage watching. R, with raised crest and colors displayed, began to march about saying: Cut, cut..... cut rapidly. He went into the upper cage, bowed, hrooed, tail-wagged. He went up and sat on the perch with Pepper, who had not retreated. They were about one foot apart. Pepper immediately lowered his head below the level of his feet and kept up a continuous crying, shaking his head sideways. (Here is the first definite observation at this place of one roadrunner addressing another with this cry). Rhody stood erect, not offering the mouse to R5, making no sound and no display. (I was now in there myself as a member of the party). This lasted for perhaps two minutes, then R5 moved into his armchair, which is at the level of the roost and close to it, lay down in sleeping posture, tail up against the back, and continued his crying and sidewise head shaking (almost a tremble). R moved over and faced him, still voiceless and without display, and not directly offering the mouse. (When he had his brood in the nest, he sometimes held a mouse or a lizard in the same way, waiting for the youngsters to reach up for it; consequently it can not be said with strict accuracy that the mouse was not offered). Rhody now gobbled the mouse himself "right in R5's face". I looked for fireworks, but there were none. Rhody now began to look around at his immediate surroundings as if looking for a nest site.

R5 now came down to the ground when I showed him a mouse and took it fearlessly. There appeared to be no atmosphere of restraint between the two birds nor, on the other hand, was there any evident attraction at this time. R5, after eating his mouse, went up and joined Rhody in the upper annex. Their relations seemed entirely indifferent. R liked it up there and settled for a short rest. R5 came down to the shelf at the S.W. corner of the

inner cage in perfect composure. In a few moments Rhody came down and made a short dash at R5, who retreated to the end of the shelf saying ook,ook.....together with a faint, higher note like that described as used by Rhody on seeing A and T in the cage. R5 was frightened somewhat. R desisted. R5 went to the outer cage and sunned his back. R scrutinized the acacia branch and the old mud lining of the magpie nesy closely. He came out into the outer cage, made a dash at R5, who retreated in alarm and cut his forehead slightly on the wire, then hid behind a rock. R did not follow up the attack (if that is what it was) and I escorted R out of the cage. He did not appear at all excited, did not want to go back, and wandered off placidly. R5 went up into the upper cage and began sunning his back. There seemed to be no residuum of excitement in him either.

From this experiment I learned exactly nothing as to R5's sex; but I did find that the whine (cry) may be addressed by one bird to the other. I was strengthened in my impression that R5 is a young bird, probably born last year . I do not know whether Rhody's dashes were an attack or a courting gesture; but they did show that they are apt to cause injury to R5 within the narrow confines of a cage, whatever they may be. Hence the time may be near when he should be released.

Rhody now loafed a great deal until about 2:50 P.M. He then discovered a new nesting site in a tree by the glade. He worked on this for 15 minutes, trying to clear an open space free of interfering branches, crying all the time.

Photos. In the meantime I had taken some snaps of R5 and of Brownie, and, on returning to the cage, found Rhody in the entry gazing longingly into the interior. R5 was 10 feet in front of him sunning his back on a rock. Neither bird was excited.

I walked up to Rhody and crouched by his side. He was so close I had to look through my reading lenses in order to get him in focus. He stood there solidly, only his eyelids fluttering. He would not take a mouse; he just wanted to stare at, as I supposed, R5. I opened the door to let him in, but he would not go in.

I now moved off toward the dormitory tree where meat is kept for the magpies. Rhody came to life, trotted after me, crying. I gave him meat. I now realized (or thought I did) that it was a large piece of meat between R5 and him, on the ground in the cage, that was the attraction there. Also I recalled that, about 2:50 he had been making strenuous, but unsuccessful, efforts to eject a pellet. In view of the fact that he had also just refused to eat a mouse, it would seem that there was some significance to this behavior, in the sense that mice were temporarily on the black list.

When R refused the mouse it was given to R5 who ate it at once even before I could get my camera focused upon him.

In fairness to Rhody it should be said that he had eaten two small salamanders shortly before he refused the mouse.

In reconsidering the Rhody--R5 affair, it occurs to me that the fact that R did not once push home an "attack": did not strike R5, may be of significance.

5:00 P.M. Since about 4:45 Brownie has been singing splendidly just outside the glade. He was very shy when I had the camera, but did not hesitate to stop his song and fly to my hand for worms, going back to resume his song. The song consisted of phrases all new to me (or forgotten) except one which is a reproduction of the peculiar bubbling song made by the meadowlark in flight.

I drove out the driveway at 5:25, and Brownie was still singing.

I passed by Rhody's night roost and noted that he there, but not in the house.

R5 casts second pellet.

Going back, now, to 11:30 A.M.: I overlooked recording that R5 was seen to disgorge his second pellet since his captivity. I am reasonably certain that the only other one cast was that of Jan.19. I have looked frequently for pellets without finding any, and all road-runners that I have had in the cage usually show symptoms of a desire to cast them several days in advance of the actual act.

R5's diet of mice began on the 18th. or 19th of December, so his first pellet of mouse hair represents an accumulation of 30-31 days (approximately).

The second pellet followed after 30 days.

While the notes did not record it, R5 had eaten a mouse only an hour or two before casting the pellet. This pellet was dispersed in water in a beaker and examined at thetime. Besides mouse hair it contained the lower jaw-bone of the mouse with a few other small bones (no skull) having a few fine, stringy, whitened fragments of flesh adhering. With the exception of a tooth or two, these are the first solid, skeletal residues found in any pellet; and they are accounted for by the bird's recent meal, still undigested.

The second pellet, still unexamined, seems to have a sort of "skin" covering a portion of it. R5 had had (as far as I know) nothing to eat but mice for the preceding 24 hours (the last one being at about 4 P.M.the day before). He may have eaten later the salamander which he had refused at 3:55 yesterday. He had had a lizard at 3 P.M. the day before yesterday. Thus, at the time the second pellet was cast, he was not known to have food of any kind for about 19½ hours, and he had refused food two hours before it was cast.

February 19th.

Dull and threatening rain.

Three visits to the vicinity of the cage and the nests: 8:15, 9:15, 10:45 A.M., did not disclose Rhody. He was not looked for elsewhere.

At 9:15 R5 again showed discrimination in favor of small mice. He had been jumping in and out of his can to look at the big mouse there and was plainly hungry, but would not take it. The moment I showed him a small mouse, he came for it at once.

Well, another pellet already.

12:05. Well, I find R5 has eaten the larger mice now, and, further, he had just ejected another pellet. (At least the one found was fresh). Evidently yesterday's effort did not complete the job. There was some fleshy matter in this one. There was no black hair in it, and the last mouse was jet black. Perhaps, then, the pellet was ejected before 9:15 and I overlooked it.

Absent until 3:30 P.M.. On returning I found Rhody carrying a mouse about aimlessly. Julio says he gave it to him about an hour earlier, and that R offered it at the cage, but that when R5 came, Rhody retreated to an acacia and remained there a long time.

After a long, slow march, with many stops, Rhody carried this mouse to his night roost, which he entered at 4:15. (Still cloudy).

No singing today.

February 20th.

At 8:30 A.M. Rhody was at his post on the west lot, wanting nothing from me.

About 9:45 he was still there; cried on seeing me, approached, changed his mind and went to the open field south east. I went out and joined him. He was hunting for small creatures in the grass, getting little. I turned rocks over for him, adding one salamander to his score. He now hunted no more, but returned to this place. He went over the fence toward nest 2-36, but came back over the top of the cage carrying nesting material, which he took to the glass house. (The first instance of his having been seen to turn his back on 2-36 while gathering material on that side of the fence).

While working at 4-36 a Red-tailed hawk sailed by about 25 feet from him, and at the same level, through the trees. (The first instance of this kind of hawk so low at this place). Rhody semi-froze for perhaps ten minutes, looking in the direction in which the hawk had gone. He now came down and walked about looking at the tops of the trees as if searching for the hawk., for about 10 minutes.

Now followed a period of more than usual activity on his part, during which he ran all about the place, sometimes pulling off "circuses" and going up into trees. He suddenly thought of nest 5-36, which he has not visited for many months, went up to it and rearranged twigs for several minutes. Down and up to the observatory where he rattlebooed; sailed down just clearing my head where I was letting Brownie take worms from hand. (B bolted, but came right back).

R continued his rapid movements about the place, finally winding up, about noon, on top of the Scamell house, where he sang and rested for a long time.

About 1 P.M. he worked again in the glass house for a short time. A few minutes later he was staring quietly at R5, equally quiet 3 feet from R in the cage. No excitement at all. Now meat from me; then off with a twig to 2-36, but dropping it and returning over the fence. This was repeated again. The third time he picked a twig up from the cage roof, walked over to where R5 could be seen through the window, stood quietly there while R5 lowered his head and cried repeatedly. The twig was eventually taken to 2-36, where he was working and crying when I left.

This is the warmest day we have had for weeks, and it is interesting to note that Rhody, simultaneously, has found the temperature high enough to warrant his making use of the "spread-eagle" type of sunning pose--also for the first time in weeks. (Temp. in Clearing at 4 P.M. 66; in court 60. Where he was sunning, est. 68). Rhody was already in his roost at 4:20, and at 5 P.M. R5 came out into the outer cage to take his third mouse of the day.

The roosting times of these two birds are not at all alike.

February Brood of Quail ?

Yesterday afternoon I caught a glimpse of what appeared to be a female quail followed by a brood of chicks, at the front fence I did not follow up the fleeting view to confirm the impression, but dismissed the matter from mind at once as being "impossible".

However, just now, without my having said anything that would suggest the subject, my new neighbor across the street remarked that he saw a female quail followed by chicks come out of the "chaparral" on the slope and turn up my driveway--this morning. He thought "about a dozen". Asked if they had feathers, he said that they were little yellow balls of down without visible feathers. He thought they had just been hatched in the last few days, and realized that young quail are not to be expected here until May or June. (This gives me another job, now: to look for this brood)

February 21st.

Rhody was heard singing about 7:45 (Clear, warm).

At 8:30 he could not be seen from the clearing. (Temp. there 60).

At 9:30 he was working hard in nest 2-36 and, strangely, he would not cry when I went there. Soon he ran down the tree (not his usual method of descent) passed rapidly by me and hurried to the next house to the north, where he went to the roof and began rattle-booing, looking north. There I left him.

At 11 I was at the old oak cleaning out a drinking place. R suddenly glided past my elbow and up into the lower branches. A harsh, angry sound preceded R's sudden exit to the top of a bush, followed by loud scripping from Brownie. (This place is where Brownie had his first nest and he presumably was exercising his assumed ownership rights). I did not investigate as I wanted to watch Rhody, who immediately came to me purposefully and cried. I turned toward the shop, Rhody leading most of the way and almost getting under my feet, looking back at me.

I got him his mouse, which he took with ritual and carried it to the cage. Now followed intensive courting of R5 with all the appropriate "trimmings". R5 was receptive to the extent that he kept near the wire, watched R with head and tail jerkings and side-steppings, curtsied and hrooed gruffly deep in his throat.

Rhody was very much in earnest, but could not be satisfied with such mild response, so sought elsewhere. Over the fence to the north he went and sat on the slope near 2-36, holding the mouse and occasionally saying wooh, wooh, wooh, wo-o-o-o-oh. After 5 minutes back to the top of the cage to show it to R5 through the window; R5 crying. No use--back to the north, five minutes wait, then up to the nest.

Brownie begins nest.

I now turned my attention to Brownie at the old oak. Though he was singing, he came promptly for worms, then took a twig up to the anticipated nest site, following with others at irregular intervals, all taken to the same spot.

12:30. Brownie is still working at this nest.

12:35 As R5 had not taken the mouse from his can, I went in and took it to the outer cage. As expected, R5 came out and took it at once when it was laid at my feet, although he had seen it more than once in the can and is accustomed to get mice from it.

At 1:25, as I passed through the orchard, a soft hroo sounded from my left rear. It was Rhody in the partial shade of a bush and I had passed him within four feet. This is an old trick of his and I have always felt that, on such occasions, he has deliberately attracted my attention to himself. I spoke to him and then passed on out of his sight. In about three minutes I again passed him, pretending not to know he was there. This time he said, wooh, wooh, woo--o-o-o-o. I stopped, spoke to him and again passed on, to return in another two or three minutes. He had, now, however, moved out into the open on top of the wall where my elbow almost brushed him as I passed, and he did not consider it necessary to call again.

About 2 P.M. he came to the cage and sat on a rock by my feet watching R5, who began to pick up twigs and stones. Hearing voices to the north of the cage, he became somewhat nervous, but did not hesitate to go there and investigate. This repeats behavior previously noted where he has gone to have a look at the cause of some

disturbing sound from a hidden source. In this instance he stood quietly watching while the men walked away, then returned to the cage.

At about 2:30 Brownie and Nova were both at the nest, the latter leaving on seeing me, and B coming for worms. The nest, a mere shadow of a platform, can now be seen. It was undoubtedly started today. The first one of last year was started (or seen to be under way) Feb.2nd.

At 3 P.M. Rhody was in the entry to the cage, no doubt wondering why there was no meat there. (The towhees had eaten it). As these notes show, road-runners of my acquaintance get nervous the moment ~~xxxx~~ they discover that they are cornered, even by one of their own kind who has,accidentally, strolled into their immediate vicinity and narrowed the most promising exit from the corner that happens to be occupied. Rhody was not at all nervous when he saw me coming until he realized that he would have to squeeze by me to get out of the three-foot square entry. Then he became frightened, but calmed down when he saw I was not "after" him.

I now opened the door to the cage and he went in. I followed and offered him a mouse, which he took at once. The stage was now set for another trial. R5 was present and watching from a roost. in the inner cage. Rhody, without ritual of any kind, went in, glanced at him, dusted (!) and swallowed the mouse, came out casually, strolled about the outer cage, walked calmly out the door and then climbed up to nest 4-36 without taking anything with him.

R5 came out to watch him depart. So, now what is the sex of R5? My guess still is that "he" is a yearling with reproductive instincts as yet unarroused.

Rhody now rested in various places nearby until 4:15, when he trotted off along the lower road headed for his roost, ~~xxx~~ looking from the rear like a little drum-major with black bear-skin shako crowning a head, which, in his case, seems to be filled with a tangle of uncoordinated impulses and vague, unsatisfied desires, at this season. I would be willing to wager that he is more at sea concerning R5 than I am!

In the morning he courted that bird perfervidly; in the afternoon he studiously ignored him under conditions ideal for courtship.

February 22nd.

A fine warm day. At 7:15 Rhody was on the Scamell back porch, and from Mrs. Scamell's account, must have been in one of his fits of "wooden abstraction", for he permitted members of the family to walk up to him and stand over him without moving, all feathers closely pressed to his body. They were astonished to see how small he is at close range. (The same phenomenon again). They argued as to whether it could be Rhody or some other bird.

During the day R was seen to work on both nests, only once on each. He loafed about practically all day.

Once I got him into the cage with R5, with a mouse, but he paid not the slightest attention to that bird, who was in plain sight of him. In fact R had been watching him from outside the cage. R took the mouse away from the cage, wandered off toward 2-36 and sta quietly on the ground for a half hour (when I left) holding the mouse in his bill and hrooing softly at long intervals.

About 3 P.M. I gave him another one, just outside the cage. This he offered to R5, from outside, earnestly, but only after he had been carrying it elsewhere for 15 minutes. He then carried it over the north fence, sat on the ground with it, as before, then

took it up to the nest. There he cried with it still in his bill for a couple of minutes, then swallowed it.
At 4 P.M. he was home again, soon trotting off toward the west lot.

Brownie was not seen to work on his nest at all; but was lying in it at 5:15 P.M., slipping out quietly to perch on my hand for worms. His feet were very warm. At one time (recorded in notes) I wondered whether unexpectedly warm feet of his indicated a rise in body temperature due to the excitement of the breeding season. While there may be such rise, of course, in this instance, as in many others observed, the high temperature of his feet was due to his having been lying on them in a nest.

Nothing was seen of the reported brood of young quail.

February 23 rd.

Rain at intervals throughout the day alternating with sunshine.

At 9:30 A.M. (raining) Rhody was seen in his house in the roost tree as I passed by.
At 2:30 I hunted for him in the brush of the west lot . He came to meet me, crying, still in the brush. I left him, carrying the mouse about in the brush looking for a recipient.

Brownie was not seen during the day.

February 24th. (Sunset 6 P.M.).

Rhody not in his roost at 10:30 A.M. (Alternate sun and showers)

At 10:30 Brownie was called over from the Robinsons' and was followed by Nova.

At 10:45 Rhody was seen carrying a twig to nest 2-36, crying piteously when I stood near him. By 10:55 he had come down and received a mouse. This he took over the fence to the cage, but did not offer it to R5, merely standing close by quietly.
R5 preened at my feet when I entered the cage, making frequent applications to his preen-gland for oil. He was so close I could see the little drop of oil which he squeezed from the gland.
He scarcely noticed Rhody, who went back over the fence and up to nest 2-36 with the mouse at 11:15.
A half hour later Rhody was back and on top of the cage sunning R5 was on a perch just under him with only the wire between. He was looking up at R with his bill only a few inches from R's feet and trying to get a look at him. He curtseyed and hrooed once. R ignored him for the most part, but once raked his bill along the wire above R5's head. Soon the were both sunning and exactly the same distance from me; in the same posture; with identical illumination; backs toward me. I could compare them well: Rhody is unmistakeably larger everywhere.
No difference can be detected in the bare skin-patch back of the eyes as to hue, tint, shade or pattern. This also applies to the slaty-purple skin above the eyes.
Rhody's breast appears to approach white more nearly than R5's. That is: it may be somewhat less tawny.
His back seems to be less"warm". That is: it is not so brown.
The downy feathers at the "cowlick" at the base of the

neck whence feathers radiate in all direction when the bird is warming its back appear to contain more white in Rhody and more tawny in R5.

About 3:15 P.M. I gave Rhody another mouse when he was at the cage, R5 observing the operation and wanting one himself, as evidenced by his coming up behind me in order to get it himself. Rhody would not come in and was little interested in R5. The same indifference was shown to R by R5. Rhody took the mouse to the mirror without offering it to the other bird, held it a long time, wandered a little, with some display, then took it to 2-36.

I then gave R5 his mouse. After eating it he became quite lively, pulled off a few circuses, some of which were initiated by first peeking at the magpies from behind a bush, coming back to repeat, etc. The magpies, especially when down on the floor of their cage, are beginning to be recognized by R5 as part of his cosmos.

Rhody was not heard to sing during the day.
Brownie did not work here.

February 25th.

Nothing of especial note during the day. Alternate rain and sun

Rhody was not seen to work at 4-36, though he entered it twice (was seen to enter it twice--but I did not watch him all the time!) as for inspection.

On one of these occasions he took nesting material from within 2 feet of the glass house and took it to 2-36.

February 26th.

Early morning hours bright.

At 8:45 R was at the mirror with pine-needles. R5 in outer cage sunning, not appearing to notice R. R took the needles to 2-36. In a few minutes R5 rattle-booed loudly from the upper annex as if aware of R's departure and commenting thereon. I was watching R at the time and he did not react visibly to the call.

At 11:30 A.M., I went out again to look up Rhody. He was working actively on the nest in the glass house in the dormitory tree. I was beginning to fear that he had decided against this one, since he has only been looking at it lately, confining his work to nest 2-36 instead. However, he kept busy until about 12 o'clock, and was taking up large quantities of nesting material and placing them carefully in the nest. He now took a rest in the nest for a few minutes, then sailed down to the cage where I was sitting watching R5 and him at the same time. R5 could see him working at the nest and had been watching quietly.

I now went into the outer cage with R5, opened the door and Rhody came in to take the live mouse offered. R5 had gone up to sit in the sand-box which is placed in the south-east corner of the inner cage about 4 feet above the floor. Rhody bowed, hrooed, wagged his tail sidewise in the courting gesture first observed in 1935, and walked in to the inner cage. He jumped up into the box with R5, who was now lowering his head, wagging it from side to side and crying, and crowded up against R5 (first time noted) head beside R5's, both facing in the same direction. Rhody touched the side of R5's head with the mouse. Clearly a direct offer, and the first observed. R5 would not take it. R now made a movement as if

to step upon R5's back. The next move was so quick that I could not follow it accurately, but Rhody suddenly pulled feathers out of R5 and there was a sharp squeal or scream and R5 dropped to the ground, Rhody not following, but remaining in the box quietly. The mouse had disappeared. R5 did not appear unduly alarmed, as he did not run away, but stood at my feet. I picked up the feathers and saw that they were all (3) from the "cowlick" at the base of R5's neck. The magpies screamed when they saw the feathers (true to form)

Rhody moved to a perch a couple of feet over the box and sat there quietly. There was no attempt to follow up the "attack". R5 moved about composedly, considered going up to Rhody, desisted and went up to a shelf 9 feet from him. I found the mouse, now dead, and held it up to Rhody, who took it calmly, held it in his bill for 15 minutes, then ate it. He liked it there, and as I did not care to leave him alone in the cage with R5, I remained with the two birds awaiting Rhody's decision as to when he would come out. Both decided to have a nice, comfortable rest in the sun for a half hour or so, then Rhody came down to the floor of the inner cage. By this time R5 was sitting on a rock in the outer cage which about 3 feet from R, but with another rock and a monkey-flower obstructing their views of each other. Rhody, standing in one spot, now began to peek-a-boo at R5, the latter reciprocating mildly, but interested and unafraid. This was repeated at intervals for about 15 minutes, both birds during the action, reversing their bodies entirely in order to peer from opposite sides of the obstruction.

Finally as Rhody showed no intention of ever coming out, I went in and "edged" him out without frightening him. He made two short, incompleted dashes at R5, not pressing the movement home, and I let him out at 11:20 P.M., then went off for luncheon.

A brief look at 1:30 showed him at work at his nest in the glass house. About 2 P.M. he sailed to the door of the cage and wanted to get in, but I did not let him. He made one or two short dashes at R5 on the other side of the wire, who retreated, curtsyed, hrooed and seemed coy and not really afraid. R went back to work again, crying at me as I passed by.

At 2:20, Julio in my absence, found R again at the cage door and gave him a live mouse, then came and told me R was offering it to R5. I went out to find R about to leave and R5 much interested. R took the mouse over the fence to nest 2-36.

Going out at about 4 P.M., I found Rhody finished for the day and about ready to start his march through the orchard to his night roost, after cutting a few capers around the tree where Brownie was sitting, being guided to the spot by the scolding of the wrentits who were on his trail.

On driving by his roost at 4:43, Rhody was seen at his No.2 position in the ladder tree.

February 27th.

Sunny and mild--as it was all day yesterday.

Morning Greetings by Rhody and Pepper.

At 8:05 I went to the cage. R5 was sunning his back in the open pose on the ground at the entrance door, watching towhees steal the meat from inside the entry. Occasionally he w would make a feint at them without shifting his feet.

When I stood by him and spoke to him, he made an odd little curtsey, waved his tail, straightened up and said :

Roo-o-o-o-o-o-o

in deep tones, rolling his Rs. He then lapsed into inscrutable silence and made no further responses of any kind.

I now looked up Rhody, finding him at his post on the west lot, 75 feet away. I called to him and he turned his head quickly in my direction. I koke-koked.
He bowed and hrooed once.

Further salutations from me caused him to slap his wings together over his back and march down to the street, stiff-leggedly. There he faced me and rattle-booed repeatedly.
When called to again, he lowered his head and whined, although he was too far away to be heard. He now proceeded to the curb to sun his back, paying no further attention to me, since the amenities were now satisfied.

At 9:15 Rhody was working industriously at his nest in the glas house using mostly twigs which I had put under the tree for him. These did not seem altogether to satisfy him, as many he picked up and dropped, then began to search for others near the tool house with results more satisfactory to him.
I now gathered stalks of the weed which he seems to like and placed them beneath the tree. These he now took in place of the twigs.

I now heard Brownie (9:30) making his low "blue-bird" note and found him gathering soap-root hairs for nest lining. He brough his sheaf to my feet, dropped them, and flew up to hand for worms. As his nest in the old oak lower story is still only a sketchy platfrom, far removed from the need of lining as yet, and as B now continued to gather more fibre, it looked as if he had another nest elsewhere in a later stage of construction--especially as the one in the oak has been neglected by him. I therefore watched him (instead of Rhody). When he had accumulated a load he flew off to the south east, apparently with it, to the low cypress trees at the curve of Selborne Drive. It looked very much like abandonment (for the first time) of this place as the chosen spot for rearing his broods--after all these years.
I could not find him in the trees, but soon heard him over at the Robinsons', so went to their gate. B soon began to sing from near the top of a pine and then sailed over my head all the way back home, but was not found at his nest here on my return.
Rhody, however, was still busily working at 10 A.M.

At 10:30 Rhody, who had been out of sight somewhere for a few minutes, now appeared running toward the dormitory tree--towhees were investigating the house. He went up, without carrying anything and they flew. He went inside to investigate, seemed satisfied and sailed down to the door of the cage. (Yesterday he had ejected towhees from the tree, actually chasing them across the oak, an acacia and a pine, all with interlacing branches. I had also tested his sense of proprietorship in this nest as I did with 5-36 last year, with the same positive result).

Rhody now went into the cage entry and watched every move of the magpies with intense concentration. He wanted to get through the door, climbed up it, out the top and to the roof. F5 was in the upper part of the inner cage. R now wanted to get down through the roof; finding he could not, he came to the door. I opened it from the inside and exhibited a mouse. R came to thethreshold, turned his back on me and concentrated on something outside without stirring. When he thawed, he came in took the mouse, held it

without display of any kind or looking for R5; finally he ate it. R5 now came out and joined us in the outer cage. Rhody immediately beat a hasty retreat through the open door! I left him sitting under the tree that overhangs the entry--thinking things over--at 10:45. Brownie could be heard singing over at the Robinsons'. (Nova, as these notes show, has always had a "bad" effect on Brownie, inducing him to absent himself frequently in order, presumably, to find her and bring her home to attend to business. Maybe this is her first victory).

At 11:05 Rhody was still thinking things over in the same place.

At 11:10 he glided out noiselessly, went to have a look at nest 4:36 from the ground, than came back to the cage to watch R5 who cocked up head and tail pertly and hrooed at R.

R now went back to work on the nest and stayed with it until about 11:20. Now followed mild flirting with R5, back to work, resting and so forth.

2:30 P.M. Rhody has worked most of the time since last entry. I got him to come into the cage at about 1:45 and take a mouse, but he went out with it at once, although R5 was nearby. He carried this mouse about the grounds and up into trees, occasionally hrooing softly and offering it many different places with ritual.

He finally ate it in nest 2-36 at 2 P.M.

At 2:30 he was back again at the cage door looking wistfully inside, now and then touching the wires with his bill. R5 did not respond. Now followed a long period of resting at various points not far from the cage: one of them the prospective nest location discovered by him the other day in the oak at the glade.

At 3:30 he appeared with a long branch which he took to the glass house and wrestled inside for several minutes, then sailed down to the cage entry again for more staring at the inmates--especially the magpies. He now simply killed time, waiting until it should be fitting for him to start his march for the west lot. This was deferred until 4:40, probably on account of the screeching of boys and girls and the yelping of their dogs in the house under construction across the street not far to one side of his regular route. The last half hour of this period he spent high in an oak at the entrance, having retreated there when the dog members of the party appeared ready to encroach upon his preserves.

Brownie was not seen here during the afternoon, though heard frequently off to the east. It looks as if he really had decided to build elsewhere and that his nest has already reached the lining stage.

February 28th.

Sunny and warm all day. Other affairs prevented keeping closely in touch with the birds, although I saw quite a lot of Brownie and Rhody under the circumstances.

At 8:15 Julio gave R a mouse at the entrance. This was followed by R taking it to the cage and offering it to R5 with ritual, after which R went away someplace.

At 8:30, when I went out, Brownie was singing from the top of the old oak and came down promptly for worms. Nova was somewhere near. I had to leave shortly, returning about 11:30. Rhody and Brownie were both here still.

Rhody hung about the cage and wanted to get in and also work-

ed at nest 4-36, being quite bold in the presence of a visitor. He remained about until time to go to roost. I looked him up at 5:30 P.M. at the latter place and found him, to my surprise, as it was mild and windless (60 deg.) stowed away in his house with only head and bill showing. Curious that he should select this place at a time when no protection from the elements was needed.

Brownie, on my return at 11:30, was found sitting in the nest he had started in the old oak. (So he, at least, has not definitely abandoned it). Nova was nearby and was seen to pick up and carry off soap-root fibres (to the Robinsons'?) so there appears to be some lack of unanimity in the thrasher family still.

Brownie was very friendly, slipping out of the nest to get worms from the visitor as well as myself, several times.

When I went to look up Rhody in his roost, Brownie was singing not far away.

March 1st.

At 8:15 A.M. Rhody was not in the vicinity of the cage, nor was he in his roost; but when I returned to the cage, he was posed solemnly on a rock close to the wire, puffed up and making no greeting. He wanted no mice and appeared interested in nothing.

R5 was up in the upper annex quietly sunning.

Rhody became mildly interested when I went into the cage and dngled a mouse on the inside not far from his nose. He at last condescended to come in and take it, but without enthusiasm. It finally occurred to him to go into the inner cage and look up R5. He made no display until reached a point below that bird; he then bowed, brooed and so forth, and went up to him; crowded up against his side and offered the mouse as before. R5, again, whined, but refused it and moved to a roost two feet away, not hastily. R had not pecked him and there was no excitement. R now ate the mouse himself and remained in the annex while R5 came out. He now wanted to get out. Once he returned to the inner cage and R made a mild threat at him and he came out again. In about 10 minutes R came out, made another bluff at R5, who went back to the inner cage, R not following. R now remained quietly standing on the ground. (He could have gone out, as the door was open). He now saw the magpies, brightened up, and for the next ten minutes or so went back to his old tactics of making feints at them and lying on the arm-chair shelf waiting for one of them to venture near enough so that he could pop out at him.

When tired of this, he went out to sit quietly under the trees. (9:20 A.M.).

At 10 A.M. I found him lying in nest 2-36 and was greeted with whines.

At 11 he was back at the cage for a session with R5 which lasted until about 11:30, when he disappeared. During this half hour he was not very active, mostly just watching R5 and shifting from place to place to keep him in view: R5 not being disturbed. Once he went half way up to nest 4-36 to eject towhees.

At 1:10 he was seen on the ground near 2-36 with a long alligator lizard, bowing and hrooing. He took it up to the nest and cried plaintively when I reached him, with the lizard still in his bill. (All he lacked was "his pocket handerkchief to hide his streaming eyes").

By 2 P.M. he was back at the cage, and for nearly an hour, with resting periods of 5 minutes or so at a time, he persistently tried to get at R5--dogged and silent. Through the door through the window in the upper part, he tried to reach him. R5 ran from place to place seeking to avoid him and becoming more and more frightened as the bird ran and flew to overtake him, making strange *kerr* and *hwah* sounds. (I.e. R5 made them) and rattle-booing. R5 was fast approaching panic, but was wiser than Archie in avoiding hurting himself on the wire.

When R5 would seek seclusion in the acacia branch Rhody would go up and run over the roof and frighten him out again. During resting periods R would, when on the ground, cock one eye up and gaze at R5 in the branches as if contemplating some new method of reaching him.

R5 became so frightened that, once when I went in and stood below him without announcing my coming, he dashed off as if I were Rhody but soon ckecked himself.

When Rhody got tired of this he went to his contemplated new nest location in the tree at the glade and began to whine as soon as he saw me approaching--even before he had left the ground,-- continuing after he reached the location and began adjusting interfering branches.

These notes show repeatedly that R almost invariably whines when in a nest, or even when "thinking"about a nest, on my approach.

On returning to the cage to see if R5 had come out of his retreat, I found him fairly calm in the outer cage, but he soon became nervous again, cause: Rhody running past with a twig for nest 2-36!

3:50. Brownie has not been seen at his nest here today, but when I went to the west fence about 1 P.M., he was heard in the thicket with Nova, soon came to the fence top for worms, then dropped to the ground and began fussing with soap-root fibre. (The thrashers have me all mixed up too!).

3:54. I have just been out to see what was doing. I spotted Rhody at the cage from 125 feet distance. He saw me at once and ran swiftly toward me without hesitation. We met where the path to the tool-house joins the driveway on which I was walking. He then turned and went toward the tool house, running half side-wise watching to see if I was coming and veered into the shop yard to take post at the window to watch me get a mouse, crying pitifully with bill touching the pane. When I came out he was already waiting for me, crying of course,as if starving or, at any rate, needing a mouse for some pressingly important project --instantly. He took it at once from my fingers and gulped it down in 5 seconds, and he had just had a big alligator lizard at 1:15 and a mouse for breakfast. How much else he had found for himself I do not know. Now why all this sudden voracity? Perhaps the scaly lizard had scraped out his pipes and made him feel empty.

At 4:10 I went out to the cage again, finding R5 running back and forth along the wire rattle-booing excitedly. At first I did not see Rhody, but he was sitting quietly peering in at R5 through the bushes from the opposite side of the cage. R5 had blood on his bill from an abrasion on his forehead. It looks as if a case parallel to that of Archie may be expected. Should developments proceed along present indicated channels R5 will be released, as I am not going to have him worried to death by Rhody, even if"his" sex is never determined, and Rhody never gets a mate.

It ~~will~~ may not be good science to release

him now, for many good and valid reasons, yet, on the other hand, it may be exactly the thing to do, scientifically considered, apart from humanitarian motives, as release from captivity would at once place both birds in completely natural relationship with each other.

At 4:30 Rhody left for the orchard, dawdled about there preening and watching the poor, down-trodden laborers on the house across the street starting up their limousines and driving off--one man to a car--after 6 hours of gossip at $12 to 14 per day.

He did not mind the accompanying sounds, some of which arose from a distance no greater than 25 feet from him; in fact I believe he was actually entertained by the activity and noise. By 5 o'clock he had gathered an audience of his own--bush- and wren-tits, towhees and crowned sparrows, one robin--slipped under the fence and trotted off along the sidewalk on the way to his bunk after a busy day without any pay, apparently happy and care-free .

March 2nd.

Rhody was first seen at the cage at 10:50, having apparently been on tour before that. R5, who had been tame and confiding up to that time, now concealed himself in the upper annex. Rhody stationed himself at a strategic point on the roof where he commanded the most extensive view of the interiors of the cages, and sat there like a statue. This kept R5 from venturing forth as long as he was there.

Rhody came down about 11:15 and I opened the cage door wide and gave him a mouse. He took it without display of any kind--~~in fact until he ate it~~ and stood near me holding it for about 15 minutes. He then walked into the cage far enough to see R5 in the upper part, halted suddenly, pivoted at right angles to his former course, crouched, then turned and walked out. During all this time there was no display and no offer to R5.

R now took a 10 minutes rest in the sun--R5 still concealed. The temperature in the sun was such that he used no form of sunning pose. (Temp. in court 64).

Rhody starts nest 3-37.

He now began mildy to trace R5, gave up and went to his new attraction: the nest site in the tree at the glade. Of course he cried when I went there to look at him. At last he came down, got a twig, carried to the mirror and then to nest 2-36! (Which is also 1-37).

However, about 12:30 he was working hard on the new nest, which is, then, 3-37.

2:05 Rhody has been working steadily at 3-37 and has a platform on which he can easily stand.

He continued to work until 2:50, when he went to the cage. I had noted the path upward through the tree that he preferred and cut out interfering branches. He thereupon adopted that route to the exclusion of others, and used some of the smaller twigs that had been removed, for his nest.

At the cage I gave him a mouse, which he again treated without ritual, held for about 10 minutes, carried about without display, then ate. He now turned his attention to R5, as he did yesterday. I opened the cage door and R5 came out.

R5 (at liberty) and Rhody

R5 ran rapidly to the west. Rhody, with a handicap of about 25 feet by the time he saw R5, had him practically overhauled by the time R5 had travelled 35 feet. R5 dashed into the lath-house followed by R. They whirled about inside. R5 was out first. A short run and a long sailing flight to the south east with R

in hot pursuit, brought them to the entrance. R5 went up the inside of the east fence. R had him in the corner pulling feathers out of him by the time I got there. I intervened at once;R desisted and stood by to watch. Both birds had bills open panting; R5 partly through coarse mesh of fence. I picked him up gently; a second's struggle without outcry and he subsided, thereafter, as long as I held him he made no attempt to escape. I took him to the house and put red ink on the white spots of his tail (having no bands) and cut off one of his tail feathers that had been hanging down several days, then took him back to the cage. He merely jumped from my hands to a roost 2 feet away and stayed there. Incidentally I found that he was plump. Rhody remained at the scene of his attack quietly for several minutes then sauntered off phlegmatically.

Judging by his own behavior as compared with Archie and Terry, and Rhody's attitude toward him and those two birds individually(with only one of them present) my guess is that Pepper is a yearling male road-runner and that Rhody either knows that he is a male, or else thinks so. (In everyday language).

As such, this is no place for him.

As long as Rhody was about, which was until about 5 o'clock, R5 would not come down from the upper annex, but when Rhody left, he came down. On making various tests I could not see that his attitude toward me had changed.

After this episode and before leaving Rhody spent his time partly at the cage standing quietly, partly at nest B-37 and once, on invitation, he followed to the tool-house looking indifferently at all my offerings, then going back to the cage. Several times when he started to leave for the night he returned to the cage.

At about 4 P.M. Brownie, who had been around most of the afternoon,was in his nest in the old oak calling Nova with fine, loud musical phrases and succeeded in getting her to come to him. Long after 5 he was keeping her in the vicinity of the nest by "talking",even while sitting on my knee taking worms as they were handed to him one at a time.

At 5:45 I went out to see how Brownie was getting on in his effort to assert his manhood as the head of the family. He was exactly where I left him half an hour or so before: about 4 feet from the ground in the sage patch near the glade, still talking. Nova was on the ground below him. After a few minutes he came to me for worms, ate several, then gathered a billful and flew back to the sage, where I could hear him making the"blue-bird" note as he searched for his mate. (6:01 P.M.). Perhaps he will have his way after all.

March 3rd.

At 8 A.M. Rhody was at his post on the west lot.(Temp. in Clearing 60 deg., sunny). A humming-bird was making his U-shaped dive and whistle above a bush near him.

R merely looked at me when I spoke to him. It is to be noted that Rhody has not been heard to sing for several days. (Does he think he has found a mate in R5 and that it is unnecessary?)

The two hummers which I have temporarily in captivity can safely be released now, I think, at any time. They appear perfect-

ly fit, and the younger one has made notable progress in assuming his adult coloration of head and throat.

Color change of immature hummer.

When rescued he had only small flecks of red here and there on throat and crown, now it is almost continuous and flares brilliantly. The change seems to have occurred without any moulting of feathers whatever. Now the red is flecked with gray and predominates in area.

This "red" of crown, sides of head, throat and gorget, variously referred to in the literature as lilac crimson, purplish red, metallic pink, rose, rose-purple , basically,with metallic reflections of different hues and in certain lights: black, is impossible to analyze accurately without color charts. However, on both birds, according to angle of incident light and angle at which it is viewed, the "red" area may be seen as black, emerald green, golden and bronzy green, golden orange, scarlet and crimson in part or as a whole, or as any of the hues first mentioned.

Rufous hummer appears

(A Rufous hummer was seen near the cage at 9 A.M.).

At 9:10 Rhody was still at his post, still unwilling to sing, though he did cry inaudibly and then rattle-boo.

At 9:30 he was gone; but at 9:40, the wrentits notified me that he was to be found at the glade. Accordingly I found him there working at nest 3-37.

At 10:30 he was still working there. I then went to the cage and sat down inside. R5 was composed and friendly.

At 10:40 Rhody came and posted himself at the wire. R5 had instantly retreated up into his hiding place in the acacia branch. Rhody remained where he was 12 minutes, most of the time keeping perfectly still except to cock an eye up occasionally in R5's direction. I doubt if he could see that bird, but it seemed evident that he knew where he was, or at least where he should be. Nevertheless, in a few minutes, he trotted off along the path leading to the corner where he had had R5 at his mercy yesterday and began a careful scrutiny of everything in the vicinity. With the exception of yesterday I had never seen him there before. After a few minutes he turned his back to the corner, rattle-booed (from a sense of frustration?) came out, sunned himself for a few minutes, then went back to work on nest 3-37.

Now these notes have cited instances and/or have referred to actions upon the part of Rhody, Archie and Terry, where each has returned to search again at a spot from which a mouse or a lizard has been seen to run, even after he had discovered the new location of the animal. And in some cases, search has been renewed in the first location even when the quarry was in plain sight elsewhere and positively known to be there by the bird.

This same thing happened also with R5,day before yesterday, with a mouse in the cage, but it was not recorded.

As a mere guess: The bird retains something equivalent to recollection of the mouse's having been under a certain rock, sees it escape, fails to catch it and returns to the original rock, having been unable to understand that the mouse, having escaped,is no longer there and can only be found in the new place. His mental picture of the occurrence is confused, if he has one; he is unable to associate the mouse in its new location with it in its old one. Perhaps it has become two mice.

Now Rhody, in going back to the corner to look for R5 (as I think was his purpose) seems to have shown the same inability to analyze and correlate events in the case of R5, that he and other road-runners have exhibited in the mouse and lizard episodes.

At 11:55 Rhody was still working at 3-37, but when I went to

the cage, soon followed; when I went to the tool-house he made his way across a powerful north wind sweeping through the gaps between the trees (Temp.66) to get his mouse, then proceeded down the lower road to the westward, bowing and hrooing.

As soon as I wrote the above paragraph I went to look him up, findinh him just outside the fence at the Clearing, still with the mouse (Temp. there 70). He came back over the fence, searched through the canopy of the acacia (tree 1, now a solid mass of golden yellow) gradually retraced his course, then carried it up to nest 3-37. (I hoped he would dedicate that nest with this sacrifice). He remained there 15 minutes, in and out of the nest 5 or 6 times, then carried the mouse to the cage, where R5 was shown it just before he retreated to the upper regions. R now swallowed the mouse, and I left as he resumed his tactics of staring up into the gloom of the upper annex where R5 remained hidden.

At 1:25 Rhody was still at the cage,as if he had not moved in the meantime, and R5 still in seclusion. In a few minutes R began to walk about slowly peering into the cage at many places. At the door he tried the wire netting with his bill. He seems to recognize this place as a possible point of entry.

At 1:35 he glided off slowly by stages to resume work on 3-37. R5 was aware of his departure and cautiously came down.

As far as known R5 has eaten nothing since yesterday morning.

R5 Again Released.

At 2:15, Rhody still working at his nest and not watching affairs at the cage, I opened the door and let Pepper out. He was not all excited, but stepped out coolly, in no hurry to leave. He looked at everything with interest showing no signs of fear. I think he knew where Rhody was, anyway I could see that bird up and down, up and down building 3-37.

Pepper walked over to the dormitory tree, then strolled down the lower road toward the west (and away from 3-37) down the only extensive vista he has had from the cage. In 20 minutes he was at the clearing (Temp. there 75). Without haste he mounted to the fence and sat there for another 20 minutes looking off over the land-and seascape spread out below for hundreds of square miles. I went to him and offered him worms; he walked toward my hnad along the wire and looked at them curiously from a distance of 18 inches, but would not take them. (He never took worms from hand anyway). He was as unafraid of me as when in the cage. When he dropped down inside, he was given a good feed of meal-worms

He now strolled back the way he had come. By 3 P.M. he was just outside the glade. There he stopped and allowed me to walk by him . I wanted to see if the coast was clear in the event that he returned to the cage. It was not! Old Rhody was mounting guard just over the entrance door, looking keenly in all directions--he knew the bird had flown. I now watched him. He now spread his wings in a spread-eagle "sunfit" making a fine heraldic ornament over the doorway. Soon he stiffened and gazed fixedly behind me. R5 was coming back to the cage and was only 30 feet away, but had slipped behind a bank, not flinching when I appeared by his side suddenly. Rhody came down deliberately and not directly toward R5, who appeared not to see him, though he worked off gradually to the east. Rhody now dashed off in that direction--toward the same corner as yesterday--and over the fence. I rushed to the fence by the cage. R5 glided past through the air like a meteor, going west; but Rhody had stopped after following but a short distance and I soon lost him.

R5 now ran up and down the fence, not excitedly, but seem-

ing to want to get back in, though not venturing to make the actual flight. This kept up for perhaps 20 minutes. Julio now informed me that Rhody was in the cage. (A piece of strategy; waiting for R5 to return?). Perhaps it was just as well that R5 did not return.

R5 did not appear frightened badly. Finally Rhody came out and sat quietly back to the fence. R5, on the other side, approached to within 25 feet of him--perhaps not seeing him. We stood by Rhody waiting to see what he would do when he discovered his quarry, which he did shortly. He was over the fence quickly, made a dash at R5, who again sailed to the west. Rhody stopped in his tracks and looked after him. Strange behavior with his prey in sight. I wonder if all this luxurious feeding has not made him fat and lazy.

After several minutes of sitting there looking like a monument, he trotted off along R5's course parallel to the fence. When he got to the corner he mounted a post to scan the territory, but found nothing .

At 4:45 I entered the brush of the west lot looking for R5 and encountered R on the same errand. He finally gave up (as I did) and went to sit at his old post.

Now, as yet, R5 has not departed in terror as Archie did. If Rhody wants to find him, he will have a wide territory in which to operate and where it will not be easy to corner that bird. After today's exhibition, I am of the opinion that R5 can be overtaken by Rhody only by strategy or by cultivating his friendship; for, I believe, that R5 is his superior in distance events, though Rhody may be his better in the dashes. Rhody's quitting in the open, seems to indicate that the luxury of Capua has smoothed out his rugged individualism.

8:30 P.M. (Temp. 62). Not a bad night for R5's first abroad--no wind.

March 4th.

At 7:15 A.M. (Temp. in court 56) Rhody was not in his roost and there was no sign of Pepper. At 7:20, however, I found Rhody sitting glumly on the ground under the 3-37 nest tree. He did not greet me in any way, but seemed to be listening keenly. He wanted no food, but occasionally he wooh, wooed very softly, audible perhaps ten feet. He was still there at the same spot 20 minutes later when I left.

At 8:30 he was working cheerfully building 3-37.

At 8:45 I saw Pepper run across the open patch of the west lot I went and got a live mouse and began searching for him in the brush and trees of the lot. Soon he was seen sitting quietly on a large branch of oak 10 watching me, but not apparently frightened, as he allowed me to approach without flinching. I then showed him the mouse and he became interested at once. I held it up to the branch and he walked down the branch and took it, eating it quickly, then resumed his former station.

At 10 A.M. the little humming-birds were place outside near some blossoming azaleas, in many of the flowers of which diluted honey had been placed with a medicine dropper. The doors of the cages were fastened open. Both birds immediately began to preen vigorously and kept it up for several minutes. By 10:15 neither had come out.

Their food dishes were now hung in the open doorways and faced so that the birds in using them would be looking out of the doors. An azalea flower containing a drop of honey was also put in each door, "Little's" partly outside. Both applied to them at once and Little came out and sat on his cage roof preening. He next visited the flowers of the surrounding azaleas and fed on them returning to the top of his cage to preen. Next he buzzed at "Big's" cage, then sat on top of it. For about 15 minutes he used one or other of the cages as a station from which to fly to the surrounding flowers, then gradually went farther and farther away. At no time had there been any sudden alarm or flight.

"Big" had been making symbolic bathing motions and his drinking dish was filled to overflowing. He then bathed for 10 minutes intermittently. His flower was now moved partly outside , but he changed to the food dish.

11:20. Big is still in his cage and has just been visited by another male hummer--not Little--his colors were complete. Big now wants another bath. 11:25. His food bottle was now placed so that he will have to be partly outside the cage to use it.

11:27. This worked and Big is now feeding at the nearest azalea just outside this window. A female Anna buzzed over the cages when they were first put out.

I doubt if Rhody knows where R5 is, as he has been working on 3-37 much of the time. At one time he was seen getting a twig for it from inside the cage.

2 P.M. Not having seen Rhody for several hours I went in search of him, thinking he might have contacted R5 and been in pursuit. Just now, however, he is standing quietly at his post with a lizard in his bill and I am going out to observe developments.

2:15. Well, the old rascal fooled me. I thought he would go into the thicket and hunt for R5; but he came over the fence instead, searched through the top of an oak, then walked up the lower road to nest 3-37. This he dedicated with the sacrifice of the lizard and then composed himself to rest. It may be that he was near the end of his search, instead of the beginning, when I first saw him.

3:10. Rhody was still resting in his nest.

4:35. At 4:10 P.M. I finished a search for R and R5 through the west lot and was down on Sandringham Road when Rhody came down the bank directly to me and whined. I turned up the street, then east along Selborne Drive toward home, Rhody trotting along behind me like a dog. It was a long and devious route to the toolhouse and we would have to pass near a group of six men on the way, and I doubted if he would stick it out, but he did. The men stared in surprise at seeing a strange bird following a man in the open street. He had followed me about 200 yards and I gave him the biggest mouse I could find. He took it to the cage door directly, bowed, entered, faced about bowed again, then went in bowing and tail-wagging at all likely looking places. In a few minutes he approached nest 3-37 with many waits and stops; then over the fence to the slope near nest 2-36. Here he waited for about 20 minutes, looking and listening, then returned, presented the mouse at the mirror with full ritual, thence to his newest nest, 3-37 where he ate it at once. This nest, at present, has his decided preference over all others.

March 5th.

At 7:45 neither Rhody nor R5 could be found about the place or at the west lot.

At 9 A.M. Rhody was given a mouse at his post on the west lot. I watched him for 1 hour and 30 minutes, during which time he did not go more than 50 or 60 feet from his starting point and he still had the mouse when I left. 30 minutes of this period was spent in the ladder tree, concentrating principally on the territory to the north west. He did not sing at all, but occasionally uttered soft wooh, wooh, woo-o-o-os audible about 20 feet.

The mouse left in R5's can in the cage disappeared during the night or early morning hours; whether through the agency of Rhody, R5, cat or by climbing out is not known.

4:25 P.M. Nothing more has been seen of R5, and I suspect that Rhody knows no more of his whereabouts than the rest of us. Rhody continued to work at intervals on nest 3-37 and is now claiming the tree and its immediate neighbors, having chase Brownie away 2 or 3 times without pressing the matter seriously.

About 3:45 he was offered a lizard by Julio--I was standing by to get a picture--but, although interested, he would not take it and trotted off to the shop-yard and looked into the tool-house through the window; a plain hint. Accordingly I followed and got him a mouse. He was waiting now at the door, crying.

This mouse he took with ritual into the upper part of the cage. There an insecure perch gave way under him and he dropped the mouse, startled. In a few minutes he came out without it and stood by me. (another hint?). I went in, got it and handed it to him . He gobbled it at once. Pretty soft!

At 5:51 he made his leap from the ladder tree to his night roost. (Sunrise 6:37, sunset 6:07; temp. in Clearing at 5 P.M. 70, at 5:50, est. 65)/

Rhody is now keeping much longer hours.

He still has not resumed song.

Brownie seems to have added nothing to the nest which he started in the old oak, yet I see both him and Nova here often. They seem to have plenty of leisure. They may not have decided on that nest at Robinsons'. On the other hand, it may be completed and they are doing their loafing here, just as, with a nest here they have, in the past, loafed elsewhere frequently.

March 6th.

At 7:30 A.M. Rhody was at his post on the west lot. About an hour later he strolled along the sidewalk toward the entrance and was given a mouse, which he eventually took up to nest 3-37 and ate. Now followed a period of work on the nest, then wanderings to the north and survey of the country from high points.

He now shifted to the south side of the place, inspected a house under construction across the street, then strolled away to the south east.

I did not see him again until about 5 P.M., at which time I was coming down from his 3-37 tree where I had been removing some twigs that interfered with his movements, and found him at the base of the ladder entirely unconcerned. A long drink and he was off on his leisurely saunter to the roost place.

This was a day of temperatures running in the low seventies.

March 7th.

Low fog in the morning lifting about 9 A.M.

Rhody was not in his roost at 8:30, but was found, on my returning , at the sage patch near his present favored nest. When I stood by him he cried and muttered alternately, then followed to the tool-house for his mouse. (See below). #

He was more than usually vocal and active in performing his ritual, which as is usual, much resembles the giving of thanks for the offering, as his bowings and scrapings begin close to me.

This mouse was exhibited at the mirror, but not to a hypothetical occupant of the cage, and was finally taken up to nest 2-36.

At 9:15 R was sunning by the cage. He then began to stroll about, looked in at this window and now (9;35) is on top of the chimney connected with the fireplace of this room. He is absolutely silent. He has not been heard to sing for several days.

During his mouse-ritual I found his hroos easily audible at about 100 feet, perhaps more.

(An Allen hummer appeared in the court while he was there).

# (My neighbor across the street just told me (10 A.M.) that he was out at 6:30 A.M. and saw Rhody near my entrance at that time, and that he had heard him singing still earlier. This modifies above statements).

At 10:A.M. Rhody was in the open field to the south. A humming bird dived down over him several times. I went to him and talked to him. He wanted nothing, so I passed on, leaving him sitting on a rock scanning the landscape to the west. I believe he continued onward on one of his searches for a mate.

At 1:20 I was looking for bush-tit nests here, finding two under construction, and, when near the clearing a rattle-boo sounded from somewhere out of sight. In a few moments Rhody came out with business to the west, but when I turned east, he came down from the fence and followed to the tool-house for his mouse. This also was treated with full honors, a visit to the inside of the cage, to the mirror outsdie, to nest 2-36, where it was presumably consumed about 1:40.

I was absent right after this until about 3 P.M. Rhody was found sitting quietly on top of the cage, remaining there until about 3:30, when he went to get a drink and loaf in the vicinity of the sage patch at the glade. Here he lay downflat on the ground and appeared to study the ground within an inch or two of him, first one side and then the other. He then made one tremendous stab at something on the hard ground, while lying down. I moved to within 4 feet. He still watched. I could see an ant now and then. This is what he was watching, for he made another stab at one, then wiped his bill hard, as if it did not taste good. This action appeared to be due merely to curiosity of a mild sort, as if bored with nothing to occupy his mind. It was now about 4 P.M. I had been observing that he was not opening his back to the sun at all during this period, whether in sun or shade, and inferred that air temperatures~~conditions~~ were probably within that hypothetical zone in which he feels no need for assuming a special pose to insure the proper degree of comfort. Further, as the light was somewhat obstructed by haze, I assumed that the humidity was probably such as to lessen the contrast which we normally find here between sensible temperatures in sun vs. shade. (On account of the stabil-

izing influence of water vapor upon temperature of air). (Badly expressed, but the germ of the thought is there).

I now went to look at the thermometers in the court and found they agreed at 66 deg., with but slight variation.

I found that Rhody had followed toward the house, and was now sunning his back -for the first time since 3 P.m.--at a point where presumably, he could not fail to observe me in case I took any action on the mouse question. I walked right on past him,as he lowered his head and cried, to the tool house, where he joined me and got his mouse . He now proceeded down the lower road, stopping frequently to perform his ritual, and out the side gate.

I followed a minute or two later and found him on my side of the street, and heard Mrs. Scamell talking to him from her house.

II went across and stood on their walk, Rhody retreating and emerging from the brush on my bank for each passing car.

I wanted to give Mrs. Scamell a demonstration of how easy it is(for one who knows the habits of a certain animal fairly well) to convince the uninitiated that that animal understands what is being said to it (and hoped it would work!).

I therefore called to Rhody from across the street:"Come over here and look at the nice automobile." (Knowing that (a) when he is carrying a mouse near the Scamell house he is attracted by reflections in their front windows,and/or, their roof as an observation point).and (b) that from that side of the street he can get a better view of the field on each side of the house, so that he is inclined to cross the street at that point anyway (c) he likes cars He did come , and stood behind a car parked at the curb and stopped. I now said to him:"Rhody, move four feet to the left and a little this way, and you will find a bright hub-cap. (Knowing, of course, that he is inquisitive about motor cars--and especially likes to look at the hub-caps --reflections). Naturally he did just that. I said (at the proper instant): "Now show ~~t~~the mouse to the bird, bow, wag your tail and say hroo-o-o". All of which he did, because he was going to do that anyway.

I now said: "Go under the c ar". He did, because he often does and I did not give the order until I saw signs of his intention.

March 8th.

At 8:15 A.M. Rhody was at his post. When I spoke to him he picked up a twig, soon dropped it, then walked off. He has done the same thing before with this same twig when I have spoken to him, during this: the mating season. During this same season--though not the last few days--his response is often to begin his song.

This is a modification of the behavior,discussed in detail Dec. 14th., pp 1314 --20, when called at this same post, but at a time when his sexual impulses were dormant.

This was a bright and sunny day with temperatures running in th the low seventies. I had little time to devote to Rhody, but looked for him casually two,or three times without seeing him, until 4:30 P.M.. I then heard Julio talking to him and found that he had made application at the tool-house for a mouse. The impression gained was that he had been devoting most of his time during the day elsewhere.

March 9th.

Warm rain during the night and threatening still (9:30 A.M.). Rhody was found at his post at 8:45 A.M., with wings drooping--a pose he often assumes when slightly damp.

I drove up to the curb and parked the car about 20 feet from him, opened the window and spoke to him, getting immediate response in the form of lowered head, crying. Without getting out of the car I opened the door and showed him a mouse, then lowered it as he approached confidently, so that he could take it from hand from the running board. His reach was longer than anticipated, for he stretched over the board from the curb, took it, went up the bank, and as I drove off, was marching about with it, bowing, hrooing and tail-wagging.

Nearly two hours later I drove by the roost tree and Rhody was peering out of the foliage with the mouse still in his bill; perhaps not trusting the weather, as it still looked threatening.

About 1:30 P.M. I drove by again and he was still (or again) there. This is not his customary attitude toward this tree.

O n returning home at 3:30, Julio told me Rhody had been given a mouse at about 3:15, had taken it into the cage and was not watched further. I found him at 4 P.M. on the slope north of the fence near nest 2-36 sitting quietly with the mouse in his bill. This mouse was finally eaten by the Scamell house at 5:30. In the meantime R had gone to none of his nests with it, but had visited the mirror several times and had been persistent in offering it there, pressing it against the glass. He had also brought it to the running-board of a car at the Scamells'while Dr. and Mrs. Scamell stood there watching him, and also to the Scamells' window.

Rhody has not been seen to work at any of his nests since last noted. What connection this has with the departure of R5 (not seen since given the mouse) I do not know.

Brownie and Nova no longer work at the nest in the old oak and remain away most of the time.

March 10th.

At 9:10 A.M., after a preliminary survey of the grounds, I went to Rhody's roost tree, but did not see him. However, to my surprise, I soon observed him in the ladder tree following his regular route with a twig in his bill. This he carried to the "house" in the roost tree and deposited. It was noted that there were other twigs already there. So, Rhody is now considering that as another nest site! Perhaps, also, this accounts for his being so long in the tree yesterday. (And his loss of interest in other nests).

At about 9:20 he was not at his roost tree, but it was seen that he has already made a substantial showing in the house: perhaps 30 or 40 twigs having been placed. I now began a search to locate him: At the west lot; the Scamells'; the field to the south; all his recent nests; the cage, without success. By this time I was pretty warm and sat down near the cage to rest. Almost instantly a soft wooh, wooh, woo-o-o-o-o-O sounded once, only. Renewed search located him, after about 5 minutes, only 30 feet from the chair I had been occupying, sitting quietly under the acacias 20 feet from the cage! When he saw that I had found him he began to "cry". The resulting mouse was treated with full honors, presented at the mirror, then taken over the fence to the north, past 2-36 nest-tree to the roof of the nearest house (Nichols') at 10 A.M. There I left him looking off over the country to the north and west, not neglecting to sun his back, and also not singing.

He has two distinct types of performance at the mirror when there with a mouse, and a third one that consists of a mixture of the two. The first one is that generally exhibited on first ap-

proaching it: He bows nearly to the ground, hroos deeply in his throat and waves his tail back and forth rapidly, the effort causing his body to oscillate. Following this, or even omitting it entirely, he steps close to the mirror, standing erect and places the tip of his bill against the glass moving it about and saying coot,coot,coot....... at the rate of 4 or 5 times per second. This is the second type.

In wandering about with the mouse, whenever he has occasion to pass close to me, he nearly always begins this coot, coot a few feet before he reaches the point nearest to me, keeps it up while passing and stops it a few feet beyond.

At 11:45 I was on Sandringham Road north of this house and perhaps a hundred feet lower,and west of the Nichols house which is at about the same elevation, and about 100 yards from both houses. The open, sloping area intervening is covered with a growth of baccharis with patches of wild strawberry, blackberry and honeysuckle low to the ground. Rhody was seen on top of the Nichols house. I went up the slope and when I looked up again, it was to see him now on the ground 15 or 20 feet away. He must have sailed down about 75 feet and as many yards to join me.

He did not greet me at all, but immediately began to move about slowly scanning the surface of the ground with an air of alert interest, making short dashes of 2 or 3 feet to prod suddenly at the earth, following with a side-sweep of the bill. He was foraging. So I spent the next half hour following him about watching. By far the most of his efforts were unproductive; after each such he snapped his bill two or three times to remove the earth. Like so many of his other performances, he seemed to dramatize this one: with exaggerated poses and gestures. His prey consisted, as far as I could determine, principally of Jerusalem crickets. His sense of hearing seemed to be the most effective guide. He did not once apply to me for food.

We soon accumulated a following of white-crowned-and song-sparrows and brown and spotted towhees. These birds made no complaint. The White-crowns permitted me to walk about within 6 feet of them without flying away. All birds were intent upon Rhody, practically disregarding me.

About 4 P.M. I sat near the cage with two visitors (Dr. and Mrs. Fraser) when Rhody appeared, saw the company and beat a retreat. I went to the tool-house to get him a mouse and induce him to return and be introduced; but when I got back to the cage, he "knew" I should, by precedent, be at the tool-house, so he went there and looked in through the window. However, he was pursuaded to come back and take the mouse in front of the visitors and treated it with full honors, following up with presentation at the mirror.

At 5:30 I went to look him up at his roost. (Cloudy, warm). I wanted to see whether he would occupy the house, now that he has started a nest in it. I had to go up and stand below it before I could see his bill sticking out above the nest. He was as far back in the house as he could get, looking snug and secure, tail up against the rest provided for that purpose--all in accordance with the plan of the builder. This is the first instance of his being seen to put up for the night in a nesting place, or, perhaps more precisely build a nest in a roosting place.

March 11th.

At 8 A.M. Rhody had left his roosting place. He was found (or rather he found me) about 8:15 near the tool house where I had been

just a few minutes earlier. He wanted a mouse at once and took it off to the north in Miesurely fashion. About 8:30 he carried it up into a small cork-elm projecting above the dense growth of baccharis and I left him there.

At 9:30 he was still there, but came down with the mouse still in his bill as I approached. He now wandered slowly to higher ground to the east and when I left him, about 10 o'clock, was climbing a pine tree to command a more extensive view. For some reason he is not singing his coo, coo... song on these excursions.

On this last one, at one time or another, he received the attention of jays, robins, hermit thrushes, the two kinds of towhees, wren-tits, white-crowned sparrows, an Allen's and an Anna's humming bird. Only the wren-tits scolded; the others seemed merely curious, though probably some of them were concerned at his presence, ~~probably~~.

At 11:30 I drove by the pine tree and he was still there, the white mouse in his bill furnishing a conspicuous marker.

I drove by again at 12:35, but could not see him. In any case here is an example of his having carried a mouse about for more than three hours.

At 2:45 I drove by his roost tree just in time to see him going into his house and settling there as if to stay a while. It had begun to rain about five minutes earlier. He did not have the mouse. No effort was made to keep in touch with him during the rest of the day.

Pepper has not been seen since he was given the mouse on March 4th.

March 12th.

The rainy spell continues. At 9:45 Rhody was not to be found anywhere after a search of three quarters of an hour.

About 11 o'clock another search was made, using the car as a base, as it was still raining and I wished to cover more ground. At 11:50 I found him under his shelter on the ground under the old oak, though I had looked there several times. He greeted me with a cry, so I got a mouse, which he did not want. This needed some explanation, consequently I went to the cage and found he had just recently gobbled the meat left there for him. As usual when wet or damp, he looked disconsolate: puffed out, with drooping wings.

At 3:10 P.M. I stood on the sidewalk below the roost tree wondering where Rhody was, when he suddenly appeared in the ladder tree carrying nesting material--a tuft of something fibrous. I wondered if he would dive throuh the canopy of the roost tree with this burden as he does when going to roost; but he took another route , though it was not much freer of obstacles.

When he had placed this stuff to his satisfaction well back in the house he sailed down to me promptly for his mouse, then marched about from place to place with appropriate ceremony. I then left. (Sky heavily clouded--frequent short showers).

March 13th.

The day dawned bright and clear. (Sunrise 6:25, sunset 6.15; but on account of the point of sunrise being at present behind a high point on the hills, sunrise much later here--perhaps a half hour).

At 7:10 A.M. Rhody was found already working at his nest in the house in the roost tree.

A 'possum caught at the cage.

On returning to the house, I was informed by Julio that there was a little dog in the box trap at the cage. Pressed for a description, he said it had long hair and was gray, like the song-sparrow just outside the window.

It proved to be an opossum that had lost a part of its tail, one vertebra showing through at the end. When the door was opened it would not come out, even when prodded. A piece of meat placed in front of its nose was soon eaten.

still working on 4-37.

At 8:15 Rhody was trying to break twigs off of the shrubs in the street where everybody could see him, and I gave him a mouse, which was carried off with due ceremony.

Brownie was singing somewhere near the glade. A whistle brought him to me, flying directly to my hand where I stood in the open street below. He was very hungry and though he retreated when a man approached and stood 10 feet from me restraining the Mc Cullough dog, he returned notwithstanding. A few minutes later, when I passed the old oak, he dropped down to me almost vertically for more. I was trying to see whether he would go to work on the nest he had started there, but he would not.

At 10: A.M. Brownie was still singing from the top of the old oak, and when, a few minutes later, I was watching Rhody carrying twigs up to his nest, another thrasher was singing a continuous s song about 50 yards away. While the song was easily recognizable as that of a thrasher, it differed so much from Brownie's and Nova's utterances that there was no possibility of confusing them. I could not identify a single phrase (although this is not especially to be wondered at) as one of B's or N's. In general, I think it can be said that, unlike so many of the lesser songsters, the California thrasher has no stereotyped song common to all individuals. This refers to the full song.

Rhody was pulling dead stalks out of the steep west bank of the west lot at street level and carrying them up the sloping trunk of the roost tree instead of via the ladder tree. The whole world could see the entire operation--if it happened to be in the right place at the right time--for it was as public a performance as I have ever seen. Poor Rhody, I fear, has no realization of the dangers to which he is subjecting himself in thus openly performing his duties within the very confines of the lair of the most ruthless animal on earth.

10:30 A.M. The'possum, another innocent, is now snoozing peacefully in the trap with door wide open. I shall cart him off and let him find another sleeping place.

12:45 . He was taken away and released 7 miles (by road) from here. He had to be dumped out of the trap, and then wanted to go back in again. On being dissuaded he crawled away deliberately to a bush where he composed himself to continue his interrupted nap.

On returning here a half dozen children --small ones--followed up the driveway and wanted to see the birds. With such a formidable array, naturally Rhody, if anywhere about, would have been invisible. However, Brownie responded nobly and flew to my hand for worms, to the delight of the children.

One of the latter said that his mother had found Rhody trapped in the basement of their house last year and had let him go--so, there is one of the "animals" mentioned above that is not ruthless. The place is a quarter of a mile south of here. (Murphy).

Brownie next went up the old oak and sang beautifully for us. Nova was in the glade below digging, then gathering lining. Perhaps there is no finished thrasher nest.

At 3 P.M., during my absence, Julio gave Rhody a mouse, as I learned on my return at about 4 P.M., Rhody being then not to be found.

Rhody carries mouse for 2 hrs. then takes to nest 4-37.

At 5:03 I went to the roost tree just in time to see Rhody jumping from his last position in the ladder tree, still with the mouse. He lay down in the nest first, then ate the mouse. After that he squirmed around until he got his tail comfortably disposed against the rest provided in the house for that purpose. He now began to adjust the structure and make things tidy. I waited until about 5:15 to see if he would go for more material, but he appeared to be finished for the day.

Making Friends With a New Thrasher

A half hour earlier I heard the low digging-song of a thrasher in the sage patch near the glade. Careful approach and observation showed that it was neither Brownie not Nova. I tossed it worms, which it did not see. Soon it went to the glade and began digging. I approached carefully, stood behind a bush 15 feet from it and tossed more worms. It began to pick them up. One stuck in a bush short of the objective. The bird flew directly toward me, lit in the bush 6 feet from me, got the worm, studied me a little in a self-possessed way, then moved off into the bushes. I now moved to the center of the open part of the glade, fully exposed, and tossed oneworm at a time in the direction of the bird, which I could not see, although Julio outside the glade could. The bird came out of the bushes at once and took each worm confident~~a~~lly; when I dropped them nearer to me it took them just the same, until it was picking them up no further than 5 feet from me. At no time did it show fear. It left, also without being frightened.

I had thought that the bird might be Nova, possessed of a sudden bold streak, xxx foraging while Brownie was attending to the hypothetical nest at the Robinsons', which would be true to form, and it is not impossible for a bird to "break" and become suddenly tame this way. I have seen it happen more than once. But this bird, besides not acting like Nova, did not have Nova's prominent superciliary stripe.

It is possible, of course, that Brownie has a new mate, and this is it; but my guess is that it is one of Brownie's offspring that was tamed many months ago, driven away and now taken advantage of B's frequent absences to forage in this territory. (Even so, it m might still be a new mate of B's).

(Incidentally thrashers, doubtless thanks to B, are now singing all over the neighborhood and at the homes of friends, some of whom have paid me the high compliment of thinking of me, automatically, when they hear the thrashers!)

Another possibility, though remote: The new bird may be the long-lost Greenie, whom Brownie has found again and with whom he has re-mated. (In the interests of science, all these birds should have been banded).

Refer to second line on this page: The bird referred to there may not have been Nova. I recall thinking at the time that it was surprisingly tame for Nova, in view of all the children present. But Nova has been with Brownie within the last day or so.

March 14th.

I called on Rhody at 6:25 A.M. He was not in his house-nest, but in his regular roost in the branches about 4 feet from it. When I stood below him and spoke to him, he stretched out his neck

and cried, but I offered him no food and he continued to sit there so I left and walked toward the entrance.

Brownie now began to call over at the Robinsons':"Stick-to-it, stick-to-it", but soon stopped, forgetting his own motto.

The direct rays of the sun had not as yet descended to this place at 6:40, but distant objects to the south and west were in full light.

At 8:30 Rhody came to the shop for his mouse, which he carried directly to the mirror with display, then went off to the north. He appears to have remained away until about 3 P.M., when he was given a lizard at the cage by Julio after having helped himself to meat there. The lizard was carried to the mirror and he was not observed further, until 4:30 when Julio gave him a mouse.

At 5:30 I saw him with this same mouse on the way to his roost.

Although Brownie is away much of the time, probably having a nest at Robinson's, he nevertheless comes home to levy tribute. At lunch time, with three of us sitting at the table in the cloister, he joined us for a few minutes to get his share, sitting on my hand.

March 15th.

Rhody was found across the street from here at 8:30 A.M., friedly enough but not wanting the meat offered, though he cried. He finally headed off for the north and was not seen all day again, although looked for frequently. He was not in the roost tree at 5:45 P.M. and had taken no food from the cage.

Since the release of R5 his interest in the vicinity of the cage has rapidly declined, and he appears to wander further afield. It began to rain about 2:30 P.M. and I expected to find him in one of the places where he seeks shelter in wet weather, but he was in none of them.

March 16th.

At 8:15 A.M. Rhody was not in his roost tree, but fresh droppings on the street indicated that he had been in the vicinity early this morning and it seems probable that he did occupy his regular sleeping place after all.

At 9:45 he was located, sitting quietly, in the leafless cork-elm in the baccharis between the Nichols' and the Reiters' house to the north. (The same tree in which he sat Mar. 11). Though it was dull and heavily clouded, I went back to get my still camera and a mouse. He cried, of course, and came down for the mouse. The next ten minutes or so he spent in performing his ritual in my immediate vicinity, usually facing me 6 or 8 feet away, as if for my benefit, as perhaps it was. Most of this performance was accompanied by rapid coots. I now accompanied him on his wanderings, during which he did not stray more than 100 yards from the elm, up to 11:45, when I left to take the films to a photo-finisher. His general direction through the thick growth had been toward his night roost; so on returning at 12:25, I stopped there, finding him at the base of the roost tree, still with the mouse. He greeted me with whines and soft hroos, crouched half a dozen times to go up to the house-nest, abandoned the idea for the time being at least--perhaps on account of hawks which engaged his attention--and began to thread his way slowly through the bushes away from the tree at 12:35, still carrying the mouse.

It is characteristic of Rhody that, when he has decidedto go in a certain direction and I happen to be in his path, he carries out his intention regardless of me, except, depending upon the topography, surrounding growth and so forth, he will make a little half circle around me. On this occasion, in order to bring him to a half and get the best angle of illumination for the camera, he frequently found me in the way. At such times and at other when he seemed to come to me voluntarily, he would stop 2 or 3 feet away, bow, tail-wag and coot,coot,coot or occasionally hroo.
Sometimes he would stay with me thus 3 minutes or more, and in order to get picture it would be necessary for me to back off, as the camera I was using could not be focused upon an object nearer than about 5 feet. (Zeiss Super-Ikomat, f 2.8).

At 1:45 he was at his post on the west lot without the mouse as I drove by. Repassing at 2 ; he was still there, so I went for camera and mouse. This time a white mouse, because it makes it very easy to follow him in the thickets--the mouse can be seen when R is invisible. While I was getting my camera ready he cried and cried and edged so close that I had to back off to get him in focus. He kept this mouse until 4:30, when he ate it in the house-nest in his roost tree. At no time did he go more than about 50 feet from his starting point where he received the mouse, nor did he call, other than to whine at me and make a few soft woos and hroos. Most of the time he spent in the ladder tree.
His working theory, at present, in searching for a mate seems to be that if he stops,looks and listens long enough, something will turn up.

March 17th.

At 9 A.M. Rhody was not to be found. Rain began to fall a little later and continued up to about 4 P.M.when it cleared.
At 1:30 Rhody, much in need of a mouse, was found in his shelter under the old oak. He carried it about until he swallowed it at 4:10 P.M. on the way to his night roost.

March 18th.

At 8:30 A.M., bright and fair, Rhody was not in his night roost, but when I passed the glade, he came running to me crying, with head close to the ground and accompanied me to the tool-house, sometimes ahead, sometimes abreast, at others behind. He did want a mouse and received it with full acknowledgements, omitting nothing. He now proceeded to carry it about with the ritual of the season.
An hour later he still had it and had gone to the west lot with it where he was apparently searching for a customer.
About 10:35 I met him near the glade, now seeming to be hunting for a new nest site, one prospective location being tree 1 (Map p. 1313A). He was now mouseless, but cried and started to follow me toward the tool-house, disappearing en route. A search of about 5 minutes revealed him looking (and crying) for a location in one of the trees of the glade. This proving unsatisfactory, he now discovered nest 3-37 which he deserted a few days ago to build in the house of the roost tree. A short examination from inside the nest and he was down again--not wanting a mouse. In perhaps 15 minutes more he decided to inspect nest 1-36 and add to it. (The first interest he has shown in this since it was abandoned early last year?) He got tired of this nest in about 20 minutes and began a series of rests and short strolls which carried him

eventually (about 11:45) to a new house under construction about 150 yards from the cage. He paid no attention to the men moving about or the noises made by them. A long rest was in order here and acceptance of a mouse. I left him lying composedly at the crest of the high bank upon which this house is placed, looking off over the landscape spread out below, at 12:15 P.M.

I did not look him up again until 5 P.M., when I found him sitting on the ground in the orchard, wanting no food. (Julio had given him a mouse at 3:30).

Rufous Humming-bird patient.

A little before 7:30 P.M. Mr. and Mrs. Frost brought a humming-bird that they thought had been mauled by a cat. (I have not gotten the full story yet, owing to my having to leave in a few minutes). The bird was unable to fly and had lost a lot of its feathers, and was in a bad way. Cursory examination indicated that it was an adult, male Rufous hummer. In the few minutes at my disposal I was unable to make it eat a honey,-milk-Mellin's food mixture. It was placed in one of the Anna's cages. It could not sit on a perch.

March 19th.

Rufous hummer still alive, eats well.

The hummer was still alive in the morning--an electric light kept the bottom of the cage warm. It ate freely of the mixture when offered in a spoon, just as the Annas did. In addition it sat on my hand and licked food off of a finger dipped in the mixture, running its tongue even under the nail.

Condition.

It is a Rufous hummer: mature male. The flight feathers seem to be intact--yet it can not fly. Most of the rump feathers are gone and the bare skin shows through redly. (Skin bruised?). It has lost feathers from the shoulders also and from the tail. Notwithstanding this mutilation of plumage it is a brilliant flame. an exquisite creature, much smaller than the smaller of the two Annas. It now sits on a perch well, but has to be placed there.

Hummer learns quickly(?).

12 M. The hummer is still unable to feed itself.(Himself). Just now I took him in hand prepared to feed him and he started licking my fingers. It happened that I had, less than two minutes before, washed my hands thoroughly with hot water and soap, rinsed them in fresh, and dried them after handling a mouse. Therefore there surely was none of the sweet food on them and there must have been little if any soapy or "human" taste. In any case, the impulse that brought about the licking action in the first place could not have been inspired, at that time, by the actual taste of anything. Furthermore, the bird applied its tongue at various places and soon desisted. Consequently it would appear that, from its earlier experience this morning, the bird had formed an association between food and the skin of my hand (from which it had some hours earlier actually licked the mixture).

A good feeder.

Method of climbing.

Like the Anna hummers, he is proving a huge feeder, reaching eagerly into the food bottle, which I have to hold for him, while he sits on my other hand. He climbs upon my hand by using bill and feet like a parrot.

Rhody shelters from rain.

1:30 P.M. It has been raining almost steadily since some time in the night, and Rhody has not been until a few minutes ago, when he was under his shelter at the old oak, ready for a mouse. About 2:30 (still raining) I found him sheltered under another of his favored refuges: the garden bench, still with the mouse, sitting quietly. When I went to him he came out and began full mouse-ritual, as if it were my appearance upon the scene that stimulated this action--as perhaps it was.

Two or three hours later Julio reported him as sitting in his house-nest in the roost tree, and poking at the twigs with his beak.

8 P.M. The Rufous hummer appeared to gain materially in strength during the afternoon. It was fed about every half hour, sitting on ones hand and reaching eagerly into the bottle. It has not yet attempted to feed from its readily accessible supply in the cage, apparently having formed no food association with it, although it sits right along side of it.

This supply is contained in a small vial fastened to another one just like it and parallel to it and the two are hung over the perch in such a way that they hang down at an angle of about 30 degrees from the horizontal, with open ends just above the perch -- one bottle on each side of the perch. The necks are painted red. There is as yet no evidence that this color has ~~a~~pproved attractive to him.

In order to build up a food association with these bottles (one of which, I should have said, is filled with water) at one of the feedings I had him sit on my left index finger and held the two bottles in my right hand with the tip of one finger closing the end of the water bottle. He now reached eagerly forward for food; but instead of reaching into the food bottle, confined his attentin to my finger covering the water bottle--not the finger nail--and the space between the two bottles. When I shifted my hand so that he could scarcely overlook the food, he suddenly discovered it and began pumping at a great rate, now and then pausing to rest then reaching with precision into the right bottle again.

I had noticed before this that when he was taken in hand he seemed quickly to associate this action with food after a little experience. On this occasion, it appears, that he still had no food association with the bottles themselves, but did associate food with my entire action and, more especially, based on previous experience, with a hand held in front of him.

While sitting on my hand after his appetite is satisfied for the time being, he tries his wings, but holds on tight. Also he has developed that same odd characteristic action of the Anna hummer in a free state, of turning his head rhythmically from side to side .

Like the Anna hummer and the thrasher he winks his upper eyelids.

At 9:30 P.M. I heard him on the floor of the cage, so took him out to see if he would eat at this time of night, given the opportunity. Although the light was very dim in that part of the room, he reached for the food with precision and kept his bill immersed much longer than usual. He was very hungry (or thirsty). Between draughts he rested; the rest became longer and the draughts shorter until they became mere sips. He now buzzed his wings and began his side to side head motion. This I took to mean that he wanted no more food, so he was restored to his perch and the cage covered. Nothing more was heard from him up to the time I left at 11:30.

March 20th.

At 7:30 A.M. Brownie was singing in the garden and came promptly to the parapet of the second story porch by my bathroom on call to get his worms. There seems little doubt of his having nested elsewhere.

At 9 A.M. Rhody was at his post. His response to call was to pick up "the" twig previously referred to. This time, however, he meant business and carried it to nest 4-37 in his house in the roost tree. There he had a strenuous tussle with it as it was large and unwieldy, and paid no attention to me until it was placed to his satisfaction. Then he began to cry and came down for his mouse. This he carried off with the appropriate seasonal ceremony.

In the meantime Rufus (the rufous hummer) had had three or four helpings of food. He will not patronize the food bottles in his cage as yet, except when one is lifted from the roost and held in front of him. Yet he sits within an inch or two of them with the sun striking the brilliant red of their tops.

No attempt was made to keep in touch with Rhody during the remainder of the forenoon.

1:30 P.M. I shall be away until about 5 P.M. Rufus eats well, but is still unable to fly and seems somewhat sleepier than he did yesterday.

5 P.M. Rufus, for the first time, was seen to sidle up to his food bottle and drink from it. This is encouraging.

5:30 P.M. On returning from an errand I found Rufus with his bill inserted into the food bottle and not eating. As he did not withdraw it, I touched him lightly and he pulled it out. I now watched him closely, as this was a new manifestation--perhaps an unfavorable one. His eyes were partly closed and he was nodding and continually thrusting his tongue out slightly beyond the tip of his bill.

5:45. Rufus is unable to sit on his perch and lies on the floor of the cage, face down. His tongue continues to be thrust out, touching the blotting paper of the floor.--eyes closed,--his respiration, which has always appeared labored--scarcely noticeable. He appears to be dying.

7 P.M. He has not moved from the spot where he has been lying--still in the same attitude, but seems to be breathing more strongly.

8 P.M. Only change is that he is breathing less strongly now.

9 P.M. Rufus died some time since the previous note. External examination showed severe bruise on the back. Perhaps he was injured internally, also.

March 21st.

Heavy rain during the night, and still (9:55) raining.

At 9:25 A.M. I drove down and parked by Rhody's tree. I could see nothing in the house-nest at first, but when I began talking to the hypothetical bird, something began to move, and Rhody, inside the nest, began to work on it--the same "guilty" reaction often observed on other occasions, both with him and Brownie--as if trying to convince me that work had been going all the time anyway.

I now showed him, from inside the car, the red box in which mice are carried, but he wanted some more convincing evidence of my good faith before he would come down. (Still raining). Next I dangled a mouse by the tail outside the car window and this removed his last doubts, so he came down, took it and began his ceremonious march in search of a mate. I did not wait to see the end of this, having an engagement, which also prevented my observing him further during the rest of a day of almost continuous rain.

However, Julio reported that he was in his nest-house at 4 P.M. and would not come down for a mouse.

March 22nd.

The day opened with sun and shadow alternating.

At 8:30 A.M., as I walked along the street toward the west lot, I heard Rhody sing his coo-song once, and found that Mrs. Scamell had just called to him and he had responded with this song, then performed one of his ludicrous circus acts and disappeared into the brush. I called and he rattle-booed from tree 8 a few times, then came for his mouse, received it with ritual, but instead of marching off with it, showed a tendency to stay near me, coot-cooting when closest.

He finally wandered over to the Scamell house and smeared the mouse on one of their dining-room windows to the accompaniment of bill-tappings. He considered going up to the roof, but changed his mind, now passed close to me (coot-cooting) on his way to the street on which many automobiles were parked and men passing back and forth in connection with the new house under construction nearby. He threaded his way through the spaces, pausing at the shiniest car to "conduct services", then to this place. Brownie, on a snag of the old oak, singing, in response to one call, now sailed down to me in the street for his tribute.

I anticipated finding Rhody at the cage, and he was on the roof peering into it. He now came down and presented the mouse at the mirror. Now followed another "first instance" for Rhody.

New Behavior of Rhody's.

I turned toward the house, leaving Rhody at the mirror. On looking back at him, I was surprised to find him following me carrying the mouse. If he had eaten the mouse, I would have interpreted the action to mean simply that he wanted another one and was merely carrying out a well established routine. It then occurred to me that it was only another one of those coincidences where I happened to be in line with some chosen objective of his--in this instance perhaps the observatory roof. Consequently I stopped near the shop-yard gate. He trotted on past me (coot-cooting) entered the yard and at once presented his mouse at the window of the tool house, thus appearing to confirm this hypothesis--except that I was wrong as to the objective--and it now appeared that it was reflecting surfaces, well known to him, that he was intent upon visiting with his mouse.

I now left him and turned back toward the old oak, then followed the driveway in nearly the opposite direction (west) and looked back. Rhody was following me. Now, I thought, perhaps I, personally, do cut some figure in this after all, and Rhody is trusting to me to turn up some miracle or other that will, in some way, bear favorably upon the solution of the mysterious urges and impulses that are perplexing him.

I now turned up a path leading from the driveway to the upper garden outside this window (the court or patio). Rhody hesitated at the point of divergence. The driveway continued straight on, and level: my course was uphill and along a line about 30 degrees to the north. His final decision was to continue on the driveway to the lily pool. There he leaned over the edge and looked at his reflection in the water. We were now on opposite sides of the pool about 20 feet apart, Rhody ten feet lower. I stood and looked down at him. He now jumped across the pool at the narrowest place and climbed up the steep, rocky bank and stood beside me.

I now turned toward this room, which has a group of three French windows (or doors--all glass) giving upon the court. R followed. When I stopped at the windows, he passed me and offered the mouse at the glass. I opened one of the windows and stepped in. R did not like the swinging window (with its moving reflections) and the swaying curtains at first, but I called to him and he came in and walked about the room for a minute or so, then went out, still with his mouse. He now stood just outside in one place scanning the surroundings, then went to the roof at 9:25. At 10 he was still there.

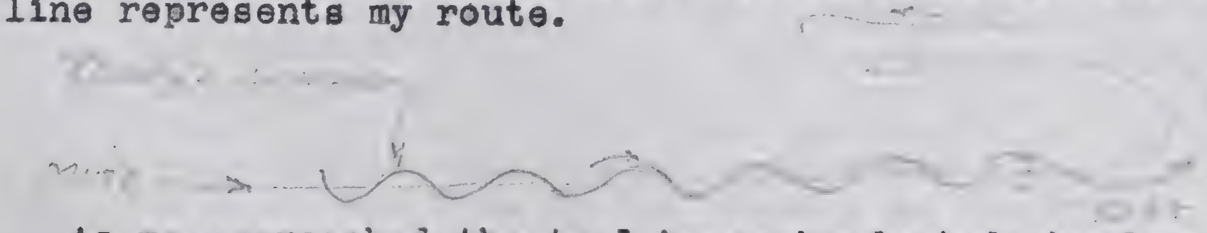
Rhody, when in possession of an offering such as a mouse or a lizard, has never followed me about in this way heretofore. The route followed was extremely circuitous, and to a great extent, one that he does not use often. While he concentrated upon a variety of reflecting surfaces to an extent not hitherto witnessed--though all were known to him--he had not been known to visit all of them consecutively, and it does not appear that his primary object was make a round of these surfaces. With the whole world to choose from, it is beyond the range of all probabilities that I should have selected, from all others, the one route that he had elected to follow in his efforts to find a mate. He was following me, and when he erred at the pool he corrected that error by cutting across a pathless space to rejoin me.

But following me, when looking for a mate, bearing tribute, was unprecedented. It was unnatural behavior, or, better: behavior not natural to him. It had never formed any portion of his life pattern. He was admitting me into a phase of his existence from which I had theretofore been excluded. To continue the use of the every-day language of these notes: his past association with me has resulted in so many happenings that have contributed to his well being, that his reliance upon me has now been extended hopefully to embrace a solution of his mating problem. In other words: he thinks that I may be able to dig up a mate for him!

At 12 o'clock Rhody was carrying lining up to his nest in the house of the roost tree; consisting of stalks and leaves of that same composite weed he likes for the purpose.

At 1:03, as I drove by, he was still at it.

At 3:45, as I was setting up my camera to get a color picture (motion) of Allen hummers in a peach tree, a loud rattle-boo announced Rhody's presence. He came running to me like a dog, and when I turned up the lower road toward the tool house, he led the way, keeping only far enough ahead to avoid being stepped on, and, in his impatience, running from one side of the road to the other and looking back at me as if to urge me to hasten. In this way he followed a course like that shown below, where the median line represents my route.



As we approached the tool-house he darted ahead, and when I got there, had already taken up position at the window and was looking in at the mousery and crying . In order to save him from immediate starvation I acted as quickly as I could. He snatched the mouse from my palm and started off; but here he seemed to remember something, came back, bowed and hrooed at my feet, then waited as if for further guidance. I took the hint and moved off--he again fol-

lowed as he did this morning; so that was not an accident. He followed to the front steps (60 yards) paused, and as I was opening the door to see if he would follow, continued straight on west along the driveway. But when I now came down the steps to return to the humming birds, he reversed his course and followed me along a descending route shaped like the letter Z to the camera. (About 75 yards). He was not interested in humming birds: saw that there was no likelihood of a miracle, so carried his mouse down to the street and eventually to the west lot.

Clearly Rhody thinks it is up to me to "do something about it."

March 23rd.

A day of almost continuous rain, bringing the season's precipitation beyond normal, despite the fact that the first few months yielded only a fraction of normal.

Rhody was heard rattlebooing in the garden about 8 A.M., but not seen. About 11 A.M. the milkman reported him in the lot to the north. I did not see him at all during the day, though several visits were made to his roost tree and other spots known to be favored by him.

Brownie was neither seen nor heard.

March 24th.

Much rain during the night, and intermittent showers still (9:45 A.M.).

Brownie was heard singing about 7:30 A.M. west of the house. He moved to the pines on the north side. Julio was talking to him there about 8 A.M., when Rhody suddenly appeared, flew up to the roof of the back porch and then to the ledge of the kitchen north window. Julio gave him Hamburger, but he wanted only a little and soon headed in the general direction of the tool-house. Julio, who knows his habits well, correctly interpreted this move as meaning that a mouse was wanted, and acted accordingly. Rhody took the mouse, reversed his former course, and carried off toward the west lot. This would appear to be one of the many instances where Rhody has shown little regard for food for himself at the moment, preferring something more attractive to carry about as an offering for a prospective mate.

I made a number of excursions hunting for him without success, until, in passing the cage for the nth. time a succession of coots drew my attention to his presence 10 feet away, still with the mouse, at 10:10 A.M. He now proceeded to display mildly at the mirror, and when I left, followed as far as the path to the shop-yard, where he asserted his independence by leaving me and taking the mouse to the window of the tool-house. He eventually wound up, at 11:42, at his house in the roost tree, where he ate the mouse two minutes later, in the nest. During the elapsed time, he seldom displayed, except when he approached me seemingly for that purpose, or when I went close to him to see if he would react in the same manner when the initiative was mine. This he usually did. Most of the time he sat quietly on the ground, listening and looking for events favorable to his quest. Occasionally, in response probably to some sound of insect or worm beneath the ground, he would brighten up and inspect the ground near his feet, first with one eye and then the other. Once he mounted the west fence and sat there for about 15 minutes, then rattle-booed and came down. It was noted that, although no rattle of mandibles could be heard (on account of the mouse in his bill, and his mouth

being open in consequence) the sound was, nevertheless, modulated and differed but slightly from his regular rattleboo.

As he drew nearer the open space in the west lot, he began to display more frequently and with greater animation; the intensity increasing as his distance from the roost decreased and his pace between displaysquickened. By the time I could reach the tree (by a route two or three times as long as his) he was already in his last position in the ladder tree, jumping across the gap a minute or two after my arrival. He had carried the mouse more than 3½ hours. (J. says the mouse was given him at 8:05 A.M.).

5:05 P.M. No rain of consequence since about 11 A.M. I did not look for Rhody until I passed the roost tree at 4 P.M. He was in the house and hard to see. I returned with a mouse at 4:15. He greeted me politely, but wanted nothing. I stayed with him 30 minutes. He was snugly ensconced in the house with tail properly supported--perfectly comfortable (it was warm and sunny) and evidently finished for the day, so I left him. Inquiry of Julio brought forth the information that he had had a mouse at 2:30 P.M.; his indifference was thus accounted for.

March 25th.

At 7:30 A.M., or a little before, Rhody was heard singing and was located on top of the new house across the street. He was still there at 8:05 when I drove by. (Went to S.F. to photograph ducks at Stow Lake). Julio reported giving him a mouse at the cage at 8:30.

At 2:P.M. I was preparing to get ~~[illegible]~~ films of humming-birds in the peach tree and Rhody, as he did yesterday, suddenly appeared under the tree without preliminary notice, and began to cry with lowered head. This meant a trip to the tool-house for a mouse, R trotting along behind. He took it with ritual and started for the cage (or mirror) but I had business with the hummers and went in that direction. R, seeing this, changed his mind and followed me to the camera in the orchard below. When he caught up to me he went through his ritual facing me. (I wonder now if he is courting me!). For a few minutes he appeared to make me the base of operations, going off a few feet and then returning to me to display again. He wound up with the mouse in his nest and house in the roost tree at 2:15.

About an hour later he was still there.

At 4 P.M. he was not. I did not look him up again.

This business of following me after being given a mouse has happened often enough now to have some significance. It will be noted, that on this occasion, he actually interrupted the carrying out of a fairly fixed habit in order to follow me. Actually he had nothing to gain by the action and no experience of his, of which I am aware, has taught him that any agreeable consequence is likely to follow it. As he already had been given the mouse he sought and still carried it in his bill, what else did he want from me?

March 26th.

Rhody was not to be found at 9:15 A.M., but at 10 I happened to catch sight of him on the observatory roof, lying in the sun. In a half hour or so he came down for his mouse, taking it with the usual display, but this time not following me. I did not keep in touch with him further.

About 1:30 P.M. I began distributing feeding stations for the humming birds, using the Cloister as ny base of supplies. (Some of the peach trees are, at present, foci for Anna, Allen and Rufous hummers, and one or all of these kinds may be seen there at almost any time). About 2 P.M.--I was in the cloister at the time--I heard Rhody's whine from some place out of sight. He evidently had been watching me and when I stepped out into the garden, he sailed down from the lwer portion of the roof (over the cloister) landed at my feet and whined persistently, following me closely as headed for the mouse abode. There he needed it instantly. He now followed me for 15 or 20 minutes, wherever I went, pausing to bow and so forth. First along the driveway to the front steps; up the steps to the front door. When I entered he moved to the right and tapped on a window where he could see mw in the hall way. I moved to this room; he shifted to its south window. I went to the upper garden; he came, then went up to the roof; but sailed down when he saw me leaving to take up the humming-bird work again. I had to go into the shop; he appeared at one of the windows. I gave him no encouragement and, in a few minutes he reappeared in the shop yard. I now went down to the orchard; he came too. I sat there to watch the hummers and he climbed about 6 feet up in a pine tree 10 feet away and sat there for more than half an hour, sitting quietly with the mouse in his bill. I left, to return a few minutes later and he had disappeared.

March 27th.

About 9 A.M. Rhody was sunning at the sage patch near the glade. Brownie came and joined us; he was a little "stiff", but took worms from me with R watching from 5 feet away, occasionally hrooing softly. R moved into the bushes.

Brownie has young (?)

Brownie now began to pick worms out of the box, when sitting on my hand, and throw them deliberately to the ground. There he "prepared" them (for the first time in months) gathered them up and began making the "blue-bird" call and wandering about the glade as if searching for his nest. Finally he climbed the old oak and sailed off to the south-east carrying the worms. He landed in a clump of cypress trees about 125 yards away, which is one of his stations between here and the Robinsons', and I lost sight of him. This behavior indicates that he probably has one or more chicks: the first probably hatched yesterday.

Rhody now appeared looking for his mouse. He took it with display, hung around me a few minutes, but did not follow when I left. (9:30).

It is interesting to consider the new conditions under which Brownie is now, presumably, rearing a brood, and the effect this circumstance has upon his behavior, if any.

For four seasons preceding the present one, all nest have been built and all broods reared within the confines of this property. This has been the heart of his territory--his home--the center of all of his activities. In getting food from me for his broods he has seldom had to travel as much as loo feet from the nest--often not at all. This place, with its human inhabitants and associations have formed an essential portion of his life pattern.

Now, assuming that he has a brood under way, it is probably not less than 250 to 350 yards from this room; although it may be in the cypresses mentioned this morning, say 150 yards from here. I have not yet attempted to locate it.

Thus far he appears to have changed his attitude toward this place in only one respect, and that is touching upon its desirability as a site for his nest. (Perhaps this was preceded by a change in roosting place). With the new brood he still comes to me for worms, but, at the present, there seems to be some confusion in his adaptation of the old pattern to the new physical conditions.

Thus, a little before noon, I found him at the sage patch again. He came at once for worms; prepared each with the extreme thoroughness which he practices when the brood is very young, but, instead of carrying them off to the nest, he, as noted this morning, carried them about the glade and vicinity as if his brood ought to be thereabouts instead of wherever it is. He was very reluctant to depart, making his blue-bird call while searching and preparing and repreparing the worms over and over again. He came back to me with the worms and wanted more. These went through the same cycle. Gradually he began to eat them one at a time at long intervals. He came to me again. This time he made no bones about it and gobbled every one. Finally he climbed the old oak, called a few times, then disappeared without carrying food.

3:30 P.M. As I came out of the shop-yard at about 2 P.M. both Brownie and Rhody discovered me at about the same time. Rhody announced his discovery with rattle-boos off to the left some place and Brownie came running from the old oak. Both arrived at about the same time. B was satisfied with one worm, prepared it and left in the direction from which he had approached (S.E.).

Rhody presented his mouse at the mirror, then lay down for a good rest still holding the mouse. I took snap shots at him from 5 feet distance as I want to get a good record of the skin pattern back of his eyes.

Next he visited nest 3-37, which he has been neglecting; came down, walked about--back again and ate the mouse there, then rested. (3 P.M.).

(In the meantime I visited the hummers. The Allen chases the Anna from the peach trees. An Allen sat and preened less than 3 feet from my face and at the same level for about 3 minutes, leaving to chase out an Anna and then returning. It is impossible to describe the exquisite beauty of this tiny creature).

At 3:20 Rhody was just coming down from the nest and Brownie was back again at my feet. (He took two worms off to the cypress). Rhody now began carrying twigs and working on 3-37--the first work there in many days, as he has been concentrating on 4- 37 in the house in the roost tree(whenever he has worked lately).

Rhody doesn't know what he wants. His cerebral cortex seems to be a cerebral vortex.

At 4 P.M. Rhody again announced his coming by a rattle-boo off to the north and soon appeared for another mouse--his third for the day. His procedure was: to the cage entry, to the mirror, a long rest in the sun, to nest 3-37, where he ate the mouse; rest there until 4:30; sunning until 5;20, then a slow march toward the west lot.

Brownie reappeared about 5 P.M. for worms. He got worms and prepared them carefully, wandered about with them 10 or 15 minutes, at one time preparing to take off to the S.E. Changed his mind--ate them. Finally came for more. This time I traced him all the way to the Robinsons'. While he flew to the cypress, he then proceeded along through the shrubbery paralleling the sidewalk until he came to Estates Drive, when he flew the rest of the way.

March 28th.

March 28th.

The sun rose in a cloudless sky.

At 7:30 A.M. Rhody was not in his roost, but at 7:45, as Brownie was getting worms from me for his brood, Rhody's whine was heard and he came from the north to join us. B, again, was a little "stiff".

(It will be recalled that B was seen to chase R out of his nest twice last year and this may have some bearing upon his selection of another site this year, though I doubt it, as his first choice this year (though later abandoned) was in the old oak).

Rhody carried his mouse to the mirror. I then went in to breakfast. In a few minutes R began his song from the top of the observatory, keeping it up for a few minutes only, then remaining silent, lying down with the mouse in his bill until 9:20 when he came down (without it) and began cutting capers along the north fence.

By this time, also, B was back for more worms, eating most of them himself. The last three or four were prepared and carried off with "blue-bird" calls.

At 10 A.M. Rhody was sitting in the cork-elm off to the north.

At 1:30 P.M. I found him working on nest 3-37 (near the glade) but he soon decided to follow to the tool-house for a mouse. He followed me along the driveay to the west to the point where the lower road joins it. There he took the latter, carried the mouse to the Scamell window, thence to their car. The hub-caps were a disappointment, because mud had been splashed on them, so he reached as high as he could and pressed the mouse against the rear bumpers. He then took it to nest 4-37 (house in the roost tree) and ate it.

At 4:30 I was working in the shop. R found me there, was given a mouse and the previous procedure was followed in exact detail up to the point where he started for the roost tree with it. I left then.

Brownie, during the day, made several visits to me for food for his distant brood, just as he has always done when he nested at home. He still seems to expect to find his young near at hand and searches for them nearby before making his final take-off.

March 29th.

Rhody had two mice today. He was not seen to work at any of his nests.

Brownie continued to come to me for worms for his nestlings and still seems to think that they should be somewhere about this place.

March 30th.

Rhody was not in his roost tree at 7:45 A.M., but as I approached, his wooh, wooh, woo-o-o- was heard nearby and he came out of the thicket and followed me all the way home for his mouse. When he had about 50 feet more to go a hawk dashed out of the bushes about 10 feet from him and headed toward him (I do not know whether or not it was an attack) and he fled precipitately. I found him looking very meek and subdued under a bush in the glade.

About 11 A.M. I joined him where he was hunting through the baccharis growth on the north slope. I gave him another mouse which he carried about for a time and then abandoned to search for other prey. Half an hour later, when he sailed down from the Reiter roof, I again offered him this same mouse. He ate it at once, but continued to search for other things on the ground, finally going to the roof of the Greenwood's garage to rest and sun.

It would seem that he was, for the time being, "off of"mice.

At 2 P.M. he was sunning at the cage. I gave him meat for a change. He now went to nest 3-37, messed about in it, cried, came down for a twig, which he now carried without hesitation directly to nest 1-36--the first addition he has been seen to make to this nest this year(2nd)The nest can not be seen from 3-37 and, in view of the directness and certainty of his progress toward it, it would seem that distinctly remembers it.

At 3:05, as I approached the glade, Brownie flew up to my hands as I was opening the worm box and not yet ready for him. He grabbed a whole bill full at once before I got the cover entirely off and proceeded to dress them on the ground, laying them out first, as is his custom, in a neat line.

I could now see Rhody carrying twigs up to 3-37. When B was well off toward his nest I went to watch Rhody. He now started to climb up to 5-36 with a huge, forked branch which proved to much for him. He dropped it and came to me crying. I thought: he wants worms--too much mouse--and the guess may have been a good one, for he crowded up close and caught them one at a time expertly and with enthusiasm.

He now noticed a twig projecting from the leaves at my feet, pulled it out and carried it up quickly to 5-36, where he placed it carefully to the accompaniment of whines, and I left to write this entry.

In less than an hour's space he has worked on three nests. This year he has worked on four out of five of his last year's nests and two of this year's. Nest 3-36, which he soon abandoned, does not appear to have been touched this year.

At the moment it may be said that Rhody has in course of construction,and/or repair, six nests. This makes him probably the most important householder in Piedmont.

At 3:50 Rhody was not to be seen. I therefore went to the shop to get worms, as I expected Brownie shortly. A hroo outside, and there was Rhody expecting something. It proved to be a mouse. This he carried to the mirror with full honors. (I thought he was off of mice!).

Rhody had no sooner left than B dropped down from a tree at my feet--worms for his youngsters. I seem to be pretty popular this afternoon.

4:15. Rhody has just gone off down the lower road; probably headed for his nest-house in the roost tree via the Scamell window. Up till now he has been in the vicinity of the cage resting in the sun, with occasional displays at the mirror. This last mouse, perhaps, was primarily required for exhibition purposes and to wind up the day in proper form.

At 5:43 he jumped to his roost, still with the mouse.

March 31st.

At 7:15 A.M. I heard somebody at the Scamell house talking to Rhody. I did not see him myself until about 3 P.M., when he was sitting out in the middle of the street 60 yards or so from the entrance of this place. I went out to him; he whined but wanted nothing. There was no traffic at the time, but a few minutes later an approaching car sent him scuttling for home, where he came directly to me, diverging from his course to climb a bank and stand beside me looking off to the south. Although he had not been interested in food a few minutes before, he now followed me when I walked toward the shop and had his mouse. This was displayed at the mirror and finally taken up to nest 1-36 and eaten about 4 P.M. His interest in this nest seems to be increasing.
At 5 P.M. (Julio reports) R went into the cage for meat.

Rhody is now seldom seen at his post on the west lot.

Brownie continued to make application for worms for his brood.

April 1st.

About 8 A.M. Rhody was not in the roost tree. I then went over to San Francisco. On returning about 11:45, I found Rhody sitting placidly in the upper annex of the cage. He had eaten the meat and Julio reported, had been given a live mouse, which he abandoned.

A"false alarm."

I was looking for Rhody about 1:10 when Julio informed me that Mrs. Mc Cullough had just telephoned that she had seen a small road-runner about 50 yards from my entrance. On questioning her, it developed that it was undoubtedly Brownie following his, now, regular route between here and the Robinsons'.
As I was approaching the glade, Rhody himself, called softly from somewhere out of sight and dropped down from the 3-37 nest-tree and began picking up twigs; but when I moved toward the tool-house, followed for a mouse, which was carried off with ceremony. Yet the other mouse was still uneaten.
At 2 P.M. he carried it to his roost tree and was in the house at 2:30--the mouse was gone (eaten). (Raining).

April 2nd.

The day dawned bright and fair.

9:40 A.M. Rhody is now working on nest 1-36--I just left him. The preceding events are interesting as illustrating the uncoordinated working of his cerebral "vortex". Thus, at 7:50, I was in the orchard on my way to see if he was at his post, when he crawled under the fence, cried and took up station at the peach tree most patronized by the hummers and began to sun his back--first whining in greeting. I tossed him a few worms which he caught perfunctorily and ate, then turned his back to sun again.
I did not think he wanted a mouse, but I went and got one. He did not follow me to the tool-house. He was now in a low branch of the peach, 2 feet above the ground. I put the mouse below him. He studied it first with one eye and then with the other and watched it crawl off, mildly interested. In a few minutes he came down, picked it up without hurting it, dropped it, watched it crawl away, turned up the bank and began to preen in the shade. I now (8:10) left him.

At 9 A.M. I heard him rattle-boo offto the south. He was on top of the McCullough chimney. When I spoke to him he sailed down to me, cried, followed me along the street and up the driveway to the tool-house, pausing occasionally en route to gaze up into the trees. He had changed his mind about mice in less than an hour and now wanted one. It was received with appropriate ceremony. When I walked away, he started to follow, changed his mind and took it to the mirror, offering it as usual.

(Here Brownie found me and got worms for his distant brood).

After spending some time at the mirror, Rhody took the mouse up to nest 3-37. When I arrived there, he cried, and came down to me coot-cooting. He now made a complete circle about me of about four feet radius, stopping three times at about equally spaced intervals to face me, bow, hroo deeply and wag his tail.

This procedure producing unsatisfactory results, he trotted down the driveway and took the mouse up to 1-36 and lay down in it. By 9:20 he had eaten the mouse. After several minutes rest he came part way down the tree aimlessly and returned to the nest. He did this twice more. (Brownie found me again here).

R now came down and sunned. I turned away. Looking back, I saw him walking along the fence toward a California laurel 25 feet from the nest oak. (The branches of another oak intermingle with those of this laurel). Rhody went up the oak and began to look for a nest site, broke off a dead branch and placed it carefully at a likely looking place, crying all the while.

He now came down for more material and took it directly to 1-36, without any uncertainty in his movements!

This nest now seems to have gained the right to be classified as 6-37.

This year to date we have:

Nest 1-37 is old 2-36, repaired and added to.
" 2-37 " " 4-36, ditto, in glass house in dorm.
" 3-37 is brand new, in oak by glade.
" 4-37 " " ", in house in roost tree.
" 5-37 " old 5-36 , in tree near cage, slightly added to.
" 6-37 " " 1-36,

Brownie's nest found. About 11:30 I went over to the Robinsons' to see if B's nest could be located. I called and, in a few moments, Brownie came unhesitatingly for worms, and ran and flew about 100 feet to an English holly at a rentrant corner of the house. The nest was~~t~~ about 7 feet up from the ground. I could hear the fairy chorus and see at least one head into which B thrust his cargo.

I offered him worms at the nest, but he would not take them, although he did not seem to object when I felt under him.

I told Miss. Robinson that, when I went home, he would probably be after me there within 5 or 10 minutes, and that is the way it worked out. I had scarcely seated myself at the oval lawn before he came running along the driveway and flew to my lap. Yet, less than ten minutes before he would not take a worm hekd against his bill.

At 2 P.M., as I sat by the cage, Rhody came out of the bushes near the entrance and ran quickly into the cage to the meat dish, examining it closely, but the towhees had stolen the meat. Clearly he had meat in his mind. I got him some and he came out, cried but would not take it, though that was what he ahd been after.

I now went to the tool-house, followed promptly by him, and he quickly took the proffered mouse.

It would seem that his visit to the cage was for the purpose of getting meat. Though he may have seen me, of course, up to the point where I got meat for him , his actions appeared entirely unconnected with me. He did not look at me as far as I could tell, cry or approach me, until I called him to come and get the meat. His behavior now took me into account, for he came to me promptly and began crying. But he did not want meat now--he refused it. Now that I had entered the picture, there was a probability that his choice of foods would be extended. It would no longer be necessary, in all probability, for him to confine himself to meat. He "knows" that I am a purveyor of mice for hungry and/or lovelorn road-runners. Further , if I should give him a mouse, the field of his activities for the immediate future would also be enlarged. He would now have his choice of eating the mouse at once or of carrying it about as a love offering and eating it later if unsuccessful in his quest. I do not say that he reasoned along these lines, or at all. Nevertheless the set-up was as described, and he did refuse the meat (which he had been seeking before I intervened) and follow me to the tool-house and cry until I gave him a mouse. He now chose the broader field of utilizing the mouse first as a love offering, and wandered off with it.

Briefly: first he wanted meat, but there was none at the familiar place. He still wanted something, so he came to me when it became evident that I was a factor to be reckoned with; but now meat would no longer satisfy his wants; past experience had taught him that he could have a mouse if he waited for it, even though it was not in evidence.

About 4:30 he was back for another mouse. He did not start for his roost tree until 5:20 and it was not until 6:11 that he made his last jump from the ladder tree to his night roost . He did not enter the house, which appears to be reserved for bad weather. He still had the mouse.

April 3rd.

Rhody was not seen during the forenoon and little attempt was made to locate him.

I looked him up about 4 P.M. and found him sunning near the glade. He wanted no food, but a half hour later, got a mouse from Julio at the tool-house, went through his regular seasonal ritual and wandered off.

About 5:30 he was seen at his post on the west lot with the mouse. He made his last jump to the night roost at 6:11: exactly the same time as yesterday, without the mouse. (Sunset 6:35).

Brownie continued to keep in touch with me for food for his nestlings.

April 4th.

About 10:15 A.M. I came across Rhody near the cage carrying a ridiculously small lizard, altogether --from my human view point--too small to serve as an attractive offering. I wondered if my idea as to what constituted a fitting offering would be accepted by Rhody as a substitue; so I got a mouse at the tool-house, R not following. I showed it to R at close range. He was interested at once, bowed, hrooed, tail-wagged, came nearer, appeared to consider the problem thus presented. I really expected him to eat the small lizard and take the much larger mouse and carry it about,

and that is exactly what happened; though it does not necessarily follow that the motives which actuated him were those upon which my expectations were established.

This incident, nevertheless, followed a course closely paralleling human behavior under comparable conditions.

(11:15 . He is on the observatory roof with the lizard).

There are many interesting happenings of similar nature in these notes. Just now I started to look over some of the past notes cursorily for some of them. Purely by accident, the first page I looked at was 1147, April 2, 1936: the first one in book 6. I had entirely forgotten this one. There R had a small alligator lizard and added meat to it, then carried the combination about, as if the lizard alone were not enough.

There is another one (I don't know where to look for it) where R, carrying a lizard and believed to be hungry, was offered meat, and he laid the lizard down (not a small one) ate the meat, then resumed his march with the lizard.

About 12:15 it was seen that Rhody had moved to the main roof of the house with his mouse, surveying the country from there. His cooing song is, for some unknown reason, now seldom heard: certainly not even once a day on the average. The last time was three days ago.

At 3:15 Rhody was seen lying in the "arm-chair" roost in the outer cage against the wire of the magpie cage, where he can surprise those birds when they approach too near, by poking his head out first on one side of the back and then the other. As soon as he spotted me on the driveway near the tool-house, he descended at once and beat me to it. The resulting mouse was first taken to the mirror and then to nest 1-36. I did not look ~~fo~~ for him again until after 5 P.M. He was then lying comfortably on top of the cage and wanted no food. About 5:30 he began his slow march to the roost tree. At 6:12 I arrived there to find that he had not reached the ladder tree; but he was there a minute later, and at 6:20, leaped across the gap to his roost--not to the house. The sky was now heavily clouded, so that it was darker than it usually is when R seeks his roost: his normal practice being to go to roost preferably in full sunlight. The only obvious indication that the gloom influenced his actions, was that he required only about 7 minutes to traverse the ladder tree, which rate has been exceeded only once, according to my recollection--unaided by reference to earlier notes.

Brownie continued to make application to me for worms. He was present at the test I made of Rhody in the morning. With R in front, B approached from the rear and I could feel his bill tapping my palm as he took worms from a hand extended out behind me. Now that his family needs more food, he takes bigger loads and he is having the same old trouble when picking up worms after he has prepared them on the ground, of dropping more than he picks up; but he has immense patience and stays with the job until he gets them all in his bill again after dozens of failures.

April 5th. and 6th.

Rhody and Brownie continued to behave true to form during this period, though Rhody showed a tendency to omit showing his mouse at the mirror. Both continued to "discover" me at times

when I was not looking for them.

I have arranged with Mr. Feltes to go with him to Hospital (pronounced Ospital´) and/or Lone Tree Canyons tonight to see if we can pluck a playmate for Rhody out of a tree as we did Pepper.

April 7th.

I left here about 2 P.M. yesterday, drove about 66 miles to Hospital´ to get a preliminary look at road conditions in the canyon (finding them bad) and certain trees I know which have been used by road-runners as nest site. I wished also to find (by daylight) if there was any evidence of their spring nesting activities there, as I did not wish to break up any families, in the event we might be so fortunate as to locate a roosting bird.

I located 5 apparently old nests, about 4 P.M. , in these particular trees and saw no road-runners. I then drove to Modesto to project my movies of the nighthawks for Mr. Feltes and convince him that they were not good enough to illustrate his Cooper Club paper on these birds. (I succeeded). After dinner we drove back to Hospital (about 25 or 30 miles). We parked in pitch darkness about 100 feet from two shaggy pepper trees, one of which I had observed earlier in the day, contained two old nests and the other one. In less than five minutes we located a roosting road-runner in the second pepper tree, duplicating almost exactly our December experience in lone tree. He was in typical road-runner posture. This looked altogether too easy! But, alas! Just as Mr. Feltes hands were about to enclose him he bolted and we could not find him. Continued search up to about 11 P.M. disclosed no Rhodies. We found two more old nests and inspected the other 5 again, but no birds in them. A complete wash-out. By the time I got home I had covered 197 miles by car and (it seemed) about the same distance on foot, not including considerable additional footage involuntarily traversed in less conventional attitudes on account of steep banks, dead branches and wire entanglements.

About 11:50 A.M. I found Rhody, rather to my surprise, sitting quietly in his roost tree. He sailed down to me, followed me along the street and to the tool house for his mouse. He did not take this one to the mirror, but, after display, to nest 3-37 and ate it. Now for a good preening and "spread-eagle" sunfitting. (Air temperature in shade about 64, but where we were, much higher, with decidedly warm ground). One of those days when the air is fresh and agreeably cool, but the direct sun stings through the clothing and makes woolen give off the odor that it does when being pressed with a hot iron.

I said to Rhody: "When you come out of this fit, the first thing to do is to scratch your neck." Which, of course he did. This action again fits in with the tentative hypothesis advanced in these notes, that one of the purposes of the spread-eagle pose is expel vermin (assumed to be present, though never seen by me-- and further assumed to be photo- and thermo-fuge)- from the sunned and heated portion of the bird's anatomy to shaded an accessible portions like the neck, breast, sides and under wing surfaces. All of these portions received his attention, either with feet or bill on this occasion.

It was observed that he plucked off a loose feather or two from his breast, and this reminds me that lately been finding more of his feathers about than usual. Without reference to back notes for confirmation (or otherwise) perhaps this indicates the beginning of his moult.

During the rest of the day, until time to go to roost, Rhody hung around most of the time, not appearing to have any important duties to perform. About mid-afternoon he was given a mouse, which he took to nest 1-36 and reappeared shortly after without it. The magpies engaged a lot of his attention, and he got meat from the cage. Still later he caught a lizard inside the cage and began his ritual combined with search through the cage. This included the back of the mirror, which leans against the wire netting outside, and the upper annex. He finally ate the lizard without coming out, and composed himself for a long rest inside until it was time to start his march for the west lot.

April 8th.

Rhody's first appearance today was at breakfast time, when he presented himself at the French window leading to the upper garden and whined at me inside at the table. He was given a mouse, received it with elaborate ceremony, presented it at various windows, and then took it up to the roof.

Brownie, about 9 A.M., found me at the cage. He now performed a new feat: with his bill full of worms, he made his whistle-kiss call, his purple-one-two-three and other musical phrases. After this he ate all of the worms which he had carefully prepared for his brood, then came back for more. These he took away. I was left with the impression that he still "felt" that the family ought to be here and not at Robinson's, and as they did not respond to his blue-bird call while he searched through the bushes, he was calling for them more imperatively. While this is pure speculation, his brood ought to be fairly large now, and it is not impossible that he really wants to get them to come over here.

11:05. I have the answer to this now: Brownie's brood is dead. About 10:45 B came to me again for worms, got and carefully prepared about 10. He then, after gathering them all up, put them down, picked up one, carried it to the edge of the shrubbery and peered into the shadow fixedly. He then came back and ate all of the worms. Obviously, the thing for me to do was to go over to the Robinsons' and have a look at the nest, which I now expected to find empty. Arriving at the holly, I immediately found a young thrasher, not quite old enough to leave the nest, dead in the branches. It could have been dead but a few hours. The nest was empty. There were no signs of Nova or other young birds; no evidence of a struggle and no Argentine ants. I am inclined to think that this one chick constituted the entire brood- that it fell out of the nest.

I carried the dead chick home and called B to come and have a look, thinking he might possibly try to feed it, or show some other signs of recognition. He came promptly enough, but spread wings and tail and made that scolding "haih" that mated thrashers often make when meeting. I held the chick close to the worm box. B got his worms, but seemed shy of the dead bird and did not offer to feed it;"scolded" and ate the worms himself, then fell to strenuous digging in the litter of leaves nearby.

Perhaps B will decide to stay home amd nest after this experience!

The chick seemed to be in perfect physical condition.

Later, in the afternoon, about 5 o'clock (it was raining) I found Brownie sitting very still under a ceanothus where it was fairly dry. He answered with little gurgles when I spoke to him: came and took one worm, ate it, wanted no more, and retired to his shelter .

About 3 P.M. I found Rhody in the cage studying the magpies. (He should be able to write a book about them now). He came out as soon as I walked toward the tool-house, got his mouse and followed me to this room, but would not come inside, preferring to stand in the door facing me and go through his ritual. He followed this by taking the mouse to all windows near at hand and pressing it against the glass.

April 9th.

Nothing was seen or heard of Brownie up to this time (10 A.M.).

When I was looking for Rhody about 9:30 and had decided that he was off on tour, a rustle behind me and he stepped out from under a rhododendron, lowered his head almost to the ground and cried, shaking his head like a palsied old man.

Of course he wanted a mouse and followed to the tool-house for it, taking it eagerly with ritual and then displayed at the nearest window. For some reason he now laid the mouse down, came back to the tool-house door and cried. I now offered him a small, jet-black mouse in place of the large white one abandoned. This he took at once, displayed and trotted off with it contentedly down the lower road as if headed for the Scamells' or the west lot. I did not follow.

These notes have shown that Rhody, on previous occasions, has often exercised undoubted discrimination in choice of mice, refusing to accept any until one of the right size was offered. Here is an instance where he accepted a mouse, apparently with finality as suited to whatever his purpose was, only to abandon it and make deliberate application for a substitute which was promptly taken. This substitute, again, received, at the outset, different treatment than given the first one in that it was immediately taken on what appeared to be the beginning of a longer journey.

The first inference suggested here (probably incorrectly) is that the larger mouse was too heavy for an extended tour.

10:33 A.M. After writing the above entry I went out to see how Rhody's actual performance supported the above speculation. I went directly to his roost tree and called. He poked his head up from the nest in the house (mouseless) ~~and~~ sailed down and began to pick at nesting material, abandoned this enterprise, strolled about aimlessly, watched a Cooper hawk circling about (without freezing) crossed the street (Sandringham Road) to the west and composed himself for a good back sunning. I had to leave him there, having other engagements, at 10:25.

At 2 P.M. Rhody trotted to me carrying a fat lizard. I was much flattered at this attention until I realized that I happened to be standing just where he wanted to go and cut no figure in his plans whatever. He passed me within 3 feet without even coot-cooting and went on down the driveway on his regular route to the west lot via the Scamells' dining room window. There he pressed tha lizard against the glass repeatedly, then retired to the railing of their porch to think matters over for ten minutes. Thence he proceeded diagonally across the street toward his roost; but at the corner he saw a man approaching on the sidewalk, so he

turned his back on this man (a decrepit looking Oriental of uncertain race) and preceded him at a ten to 20 yard interval, for 75 yards, or until he came to the path leading up the bank through the trees to the side gate. I could not find him in the orchard, so went to his roost tree, arriving just in time to find him following his regular route through the ladder tree. At 2:30 he entered the nest in the house, with the lizard.

At 4:10 P.M. I went to the fence at the clearing and called once. I heard a faint whine and he came out of the brush and flew over the fence, followed me to the tool-house.

As an experiment I offered him two mice at the same time: one white, one brown, both small, about half grown. He took the white mouse, started away, now seemed to see the brown one for the first time and came back as if to catch it also, with the first one still in his bill. But the mouse crawled under me and R desisted. It now occured to him that it would be a good plan to eat the first one, which he did. I fished out the brown one and he took it, displayed and went to the mirror, pressing it against the glass, waiting quietly and then repeating. This lasted for 5 or 10 minutes, when he bolted upon hearing the voices of two little children (whom he could not see) as they approached the rear of the cage on the other side of the fence. (Children are "bad medicine"for him). I used up several minutes in relocating him: in the old oak, just swallowing the mouse.

Brownie was not seen or heard all day. I expected that he would be considerably in evidence: looking for a new nest site, calling his mate and so forth.

April 10th.

At 9:30, raining slightly, Rody presented himself for a mouse, taking it with full honors off to the west, using the back road instead of the lower road along the south side.

10:15. Rhody now at the kitchen door with his mouse, having changed his mind about the west lot.

A few minutes ago I found the back-bone, with one leg attached, of a freshly killed thrasher. Further search disclosed a tibia with foot attached and some fragments of wing structure. 20 feet away I found tail and breast feathers with droppings of a predatory bird strung out in a straight line, as if the bird had taken flight from that spot.

Examination of the thrasher feet showed that the bird was no longer young, as the scales exhibited the roughened appearance that Brownie's have been acquiring in the last year or two. B has not been seen or heard this morning. (!?).

12:30 P.M. Calling and searching here and at the Robinsons' proved fruitless.

At 2:30 Rhody came to the cage and inspected the magpies, then came out for mice. At the tool-house I again offered him two simultaneously, holding them by the tails. He reached for them, but appeared not to like their vigorous squirming, so I laid one down, which he immediately took. I now placed the other near him. He wanted it too and tried to pick it up several times with the other still in his bill-- a difficult feat--at last succeeding. He now reflected upon what to do about it, finally deciding to drop one and eat the other, and abandon the one dropped.

Now followed about an hour of preening during which feathers

from his breast were again discarded.

A hawk swooped down and passed over his head not more than 10 feet away as he was doing a "spread-eagle sun-fit". He straightend up at once, on guard, but not freezing and, for several minutes, stared in the direction of the hawk's flight. During this hour he spotted four more hawks high overhead, then entered the cage. Failing to locate his meat (which had been shifted to a less conspicuous place) he came to the wire and cried at me from the inside). I handed him one worm at a time through the mesh. He refused meat. I now went toward the tool-house. He followed at once. He would not take the mouse he had left there, even when I picked it up and dangled it in front of his nose, but cried almost continuously. I surrendered and gave him a live one, which he took off "on tour" with appropriate ceremony. A spoiled bird.

Brownie remained missing during the rest of the day.

April 11th.

At about 6:50 A.M. a thrasher--not Brownie--sat outside my bedroom window in an oak, making no sound. He dived down into the thicket where the thrasher remains were found yesterday. (If B is gone, how soon will other thrashers claim this territory?)

Before 7 A.M. Rhody rattle-booed from the observatory roof. He remained there an hour and a half longer, occasionally singing his coo-song.

At 11 A.M. he must have heard me hammering in the shop, for he came to the door and whined. We went to the tool-house and got him a mouse. I returned to the shop. He now discovered that the shop has a fine row of windows on the north side about five feet from the ground, and a long window ledge just right for roadrunners who want to exhibit trophies to the elusive bird always found in such places. The exhibition finished, he went to the roof and I left him to his own devices.

At 4:10 P.M. I found him inspecting the magpies calmly after having eaten the meat in the cage. I sat down to watch. For 50 minutes, with only a few short periods of rest, he staged the most elaborate performance yet seen with the magpies as the stimulus of his activities. At the present time the magpies are building a nest in their cage and the female is very noisy in her solicitation of the male. There is thus much movement within the cage accompanying the cries. There is a possibility also that Rhody recognizes dimly (or instinctively)the presence of a female in the oestrous cycle. His performance, however, was almost precisely similar to that before the mirror when he first discovered, plus additional antics, which looked very much like play. Thus it seemed to be a combination of his earlier mirror-dance with a shifting objective, his "circus" through the bushes with a vertical component now added (climbing up the wire netting) hide-and-seek, peekaboo, tag, puss-in-the-corner and so forth, with boos and rattles apart or combined. He appeared to be having a glorious time. (I forgot to include feinting at pecks).

The magpies showed little interest or concern. The first bout lasted 20 minutes; R then retired to the inner cage for a drink, coming out soon with a rush at some new cry from the magpies,to go over the whole thing again for 20 minutes more. Especially entertaining was his trick of composing himself as if for a long rest in his "arm-chair" roost,where the magpies could see only the tip of his tail, and keep perfectly quiet except for rolling

his eyes in anticipation of the magpies' reappearance at some nearby point where could pop out and deliver a "pulled" peck or loud booh. During all this he paid no attention to me, until he came out at 5 P.M. Then he recognized my existence as a purveyor of mice.

At 5:45, when I drove down the street, he was sitting quietly in a sycamore in front of the Scamell house.

No Brownie today.

April 12th.

At 9:10 A.M. I found Rhody on the street to the S.W. He came across to me to catch worms, then followed me here to the te[illegible] house for a mouse, took it to the cage entrance (but not to the mirror) and displayed. One of the magpies was on the ground near the wire. He took the mouse to the nearest point to it, bowed, hrooed and tail-wagged--the first(?) instance of a tendency to court these birds, though perhaps not significant ... (10:30, tapping on the window 8 feet to my right, coots and soft hroos: Rhody with his mouse looking in at me, and looking for a way to get in! 10:34½, he gives it up as a hopeless task, moves off slowly). The incompleted sentence above was to have continued thus:..because immediately after he "courted" the cat trap and then went to the observatory roof.

After leaving me at 10:34½ it was found that he had gone to the Scamells' roof with his burden. About 11:30 he was seen to make a long glide from the roof (unladen) to the west lot. I now entered the brush there, since he had not paused at his post,and soon found him gathering twigs. These he carried to nest 2-35 in tree 8 (Map p.1313A), cried when I arrived below it, but continued to add twigs to it which he broke off inside the tree near my head. It was seen that this nest has already been greatly extended, so this is not the first time he has worked on it this year. This nest is now, also, 7-37 as well as 2-35.

R's nest 2-35 becomes nest 7-37.

There was a thrasher over there, lying in the sun (Nova?). It departed promptly upon seeing me.

Still not the slightest sight or sound of Brownie. I believe there is now no doubt that he was at last overtaken by the fate that he feared all these years, and so carefully sought to avoid--a possibility, or rather a probability, that I have considered with foreboding from the time our friendship was first established on a firm basis. With Brownie goes one of the strongest ties binding me to this place.

At 2:30 Rhody was found on the way to nest 1-36 with a lizard, which he ate in the nest, cried, rearranged twigs, then settled for a rest.

At 3:15 he came to the cage, squeezing between my feet and the wire, as that was the shortest path to the door. He ate a small piece of meat, then watched the magpies (who were rather quiet) from the perch close to the wire, making no effort to play with them for ten minutes. He now went into the inner cage for a drink. Now to the arm-chair roost for 30 minutes, mostly lying down comfortably, but two or three times popping out to let the magpies know he was on the job, although he made no threats at them. Next he condescended to observe my presence, trotted to the wire and stood looking at me without a sound. I handed one worm at a time in to him. Now back to his shelf for another rest, then aninspect-

ion of the meat dish followed by decision not to tke the meat, but to come and have another look at me, then back to the shelf. Again this action was repeated. Naturally I knew what he wanted, whether he did or not, so I headed for the work-shop. One dash at the magpies and he was out of the cage after me. He now found his voice--previous application had been silent. The mouse was taken to the mirror for display, but he hesitated where the path forks and considered taking it to the cage entrance. Finaly, at 4:15 he went up to nest 5-36 and ate it, then began to whine.

At 5:40, as I drove up the street below, Rhody was just leaving this place on his way to inspect the automobiles in front of the Scamell house. He started to retreat when he saw my car approaching, but when I called to him, stopped and continued on to look over the cars; I then left .

R's moult.

There was a loose feather hanging from his throat. He also lost one while in the cage, and it was noted that onehad also been left in his new nest, 7-37. Spring moult, I suppose.

April 13th.

9:20 A.M. Rain threatening. At 9 I went to the west fence and called Rhody, thinking he might be at work on his new nest. There was no response, but, as I was returning along the lower road, a tawny shadow hurriedly overtook me, without a sound. At the tool house R waited patiently for his mouse, still saying nothing. This mouse, a big black hybrid, he gobbled with no ceremony whatever, then turned his back to me and observed the surroundings. All of this time he had been absolutely dumb.

Curiously, that loose feather (or one like it) was still hanging from his throat, and his breast seemed somewhat rough.

Julio now dreams of Brownie.

Julio told me he dreamt of Brownie last night. Poor old B got under his skin too.

I was absent from 1 P.M. to 12:30 A.M. (14th) --another attempt to get a mate for Rhody that failed; this time with Donald Brock in Corral Hollow and Hospital Canyon, visiting the same trees at night in the latter as a week ago. No road-runners seen except in the daytime.

April 14th.

This morning, while working in the garden, I came upon a mass of feathers about 25 feet from the point where Brownie was last seen alive. Searching through them I found his head intact. This was fully 50 yards from the first discovery. It was one of Brownie's favorite haunts, and he was probably caught there and decapitated, then carried to the place where the first fragments were found. These pitiful remnants of this splendid bird and good friend have been reduced to ashes in intense flame, reverently, while accorded the honor, hiterto granted in this house only to men who have passed on--and then but few--of Mendelssohn's "O Rest in the Lord",on the pipe organ.

Requiescat in Pace!

About noon Rhody was seen making the rounds of the various reflecting surfaces carrying an alligator lizard. This creature had a death grip on its own tail.

About 4 P.M. I thought it was time for Rhody to be holding his seance with the magpies, and so it proved; though it was a quiet one at the moment. He responded at once to my suggestion that he come to the tool-house for his mouse. Again he gulped it down without ceremony. (Is this a sign of the wane of the mating urge, as it was last year?) It seems too soon).

When I went back to work, he returned to the cage. I took a peep at him occasionally. Each time he was sitting on his shelf quietly but observant. He did not come out again until about 5:20, and then seemed to want company, for he hung around not farfrom me until I left him, still here, at 6 P.M. In the meantime he had perched on top of an isolated feeding station for seed-eating birds on a pole near the cage, and on a similar one at the oval lawn--both unusual places for him. He wanted no more mice although he followed me to the tool-house once. He watched towhees and quail feeding near him with obvious interest, but did not offer to molest them. I thought that he perhaps wanted worms. He did, but only a few and would catch only my good shots and let the wild ones go, not picking them up at all. Finally he refused to catch some that struck him on the bill, but he still kept his place facing me three feet away as if still expecting something more of me. What it was, I do not know. Maybe he is studying me ! Or perhaps he knows I had just tried to get a mate for him and was expecting me to produce it suddenly, like a conjurer. Or more probably he had nothing else to do.

April 15th. to 18th., incl. (R here now three years).

During this period I had little opportunity to observe bird affairs at this place. However Rhody was about as usual, making his regular visits to the cage to watch the magpies, and to call upon the neighbors.

On the 15th.,at 7:55 A.M., I came upon him inside the cage, pulling the feathers off of a golden-crowned sparrow that, I doubt not, he had caught inside, since these and other birds frequently enter. This is the closest approximation I have to direct evidence of his having caught and killed a bird in a free state.

In this act there may be some light upon the behavior described in the last paragraph of the Apr. 14th. record. I was puzzled at the time.

When Rhody saw me coming he ran out of the cage--an unusual act--as if he had a sense of guilt and feared punishment. In reality, I suppose this behavior may be correlated with his relative "wildnesss"(commented upon in these notes) when given a mouse in contrast to his more matter of fact behavior when accepting meat. In other words: When I came upon him he was still dominated by the spirit of the chase and, so to speak, had relapsed momentarily into his earlier, more primitive attitude towards man.

He stopped running when I spoke to him and concentrated upon removing the feathers, making a good job of it, although the fastidious human animal would consider it still a trifle too fuzzy for consumption. At last he swallowed it with comparative ease, taking only about thirty seconds to accomplish the act. I had thought it probable that he would fail, although I have seen him swallow an English sparrow with the feathers still upon it, as noted herein.

It was on the 15th. of April 1934 that Julio asked me if I had seen the"big spotted bird, larger than a robin, dusting in the road"; and it was the 16th. when I first encountered Rhody,ten feet away.

On the 16th., coming back to this year now, Rhody was still on the Wicklands' chimney 300 yards south where had been for a n hour, as I drove off to the Cooper Club meeting, at 8:30 A.M.

Julio reports him as visiting the cage during the day and getting a mouse from him. He also reported R on the 17th. going to the cage with a lizard. On the 18th. R spent much time away from here but was located at the Frasers' and the Sampsons' where he had been amusing the members of those households and where his beauty and friendliness caused much comment. About 5 P.M. he entered th the cage. His meat was well dried by this time and he spent considerable time "killing" it. On the arrival of a friend (S.H.) with a four year old youngster (R is not afraid of this friend) we went to the cage to note R's reaction to the child. He became nervous at once: ran out with characteristic gestures and hid. Yet this was a quiet, mannerly youngster, void of stridency.

April 19th.

9:45 A.M. I went out to look for Rhody about 7:50 A.M. and not far to go, although I found him in an unexpected place. He was picking up twigs by the magnolia tree and building a new nest, No. 8-37 in an oak only a few feet from the south west corner of the living room, about 15 feet from a window! Now if he only had a mate at this instant, we might have a brood of road-runners right where we could watch all operations from indoors!

Rhody is a single-minded personage. Though friendly enough, crying in acknowledgement of my presence, this nest is at present the only thing in the world of importance to him. Up to the time of this note (he is still working diligently) mice mean nothing to him.

The nest is about 15 feet above the ground and approach to it is the most difficult for the bird of all of his nests. To carry each twig up involves a struggle with branches and foliage. He has not yet standardized a route; once he fell about 8 feet, recovering before reaching the ground. There is a bushtit nest about 15 feet from it. Its owners are disturbed by R's thrashing his way to his own rudimentary edifice. This is the noisiest of his performances to date.

10 A.M. Still working hard. R does not know it, but there are several sites within a dozen or so feet of the chosen one that would be ideal for him, even measured by his own standards.

Apparently when the nesting urge is upon him, he simply must begin to build at once and is not overly analytical.

At 10:20 he was not working. I found him crouched flat upon the ground at the corner of the cage , in a tense attitude, watching something. It proved that it was something in a crack of the rocks (probably a lizard) for, in about 3 minutes, he got up and explored the crevice then trotted after me to the tool-house for a mouse, receiving it with a rumbling hroo, bows and tail-wags. He lost no time in hunting for reflecting surfaces, but carried it to the observatory roof. (I had forgotten to offer him a freshly killed gopher snake about 3 feet long, that had apparently been run over by an automobile). As he took the mouse, a kinglet came down from a tree and fluttered over him.

The next opportunity I had to check up on him came at 12:40 P.M. He was then up in his nest, but came down for more mater-

ial as I passed underneath. The trunk of the tree is less than 3 feet from the corner of the house and the driveway passes under its canopy. I find that he can been seen working from inside the house, though the foliage interferes with a clear view.

1:25P.M. Rhody is having a tough time of it--struggling up through the tangle of branches and twigs; his plumage shows the effect of it; but he persists stubbornly. Once again he had a fall that left him sprawling with outspread wings and tail in a shrub below the nest; but he recovered the twig that he had dropped and forced his way patiently upward, without complaint. On safely placing it, however, he began to cry plaintively. Now I wonder why. It has something to do with me, because, now that I can watch him without his knowing that I am present, I find he does not cry when all alone.

1:50 He seems to be getting the last portion of his arboreal pathway more or less standardized, but he is leaving feathers here and there. He is now using twigs that I have gathered for him and placed on the ground nearby. The bushtits do not like to have him so near their nest; but if they have patience(Rhody will prpbably seek still another nest site) they will doubtless have no cause for concern in the end.

At 2:15 he was still working when I left to return at 3:30, finding him then paying his compliments to the magpies in the cage. When he saw me, he came out and followed to the tool-house for a mouse. (I had completely forgotten to offer him the snake). This mouse was presented at the mirror, then taken to nest 5-36,where a half hour elapsed before it was eaten, R, in the interim, hrooing softly at intervals of two or three minutes. He came down at 4:15 to warm his back. It being a rather warm day, temperatures conditions prescribed the spread-eagle pose. This was immediately followed by the customary, vigorous neck-scratching; and this by painstaking bill-work upon his breast and "arm-pits".

I now remembered the snake (when he was presumably no longer hungry).and placed it about 10 feet from him. He was interested at once, but not strongly, contenting himself with going over to it and flirting his wings in that curious horizontal gesture of his which is reserved for occasions of this sort. He circled about it placidly, then went back to his sunning and preening. It was now considerably cooler and the open-bowl type of pose was used.

The snake was now removed and placed in the path where I was certain he would pass it later, and "discover" it for himself.

About 5:15 he began to hunt for food 6 or 8 feet from my chair. It was interesting to watch his method under conditions of his own choosing. It was mostly still-hunting: Listening--a short dash--a stab with the bill into the earth or leaves--watching that point, and when something stirred (which I could also now see) a Jerusalem cricket triumphantly seized and gulped down. Now a short wait at the same spot--a last stirring of the leaves where the cricket had lurked--more listening followed by a dash of two or three feet and a short, thick grub was extracted. I now tossed two meal-worms when he was not looking. One remained in the open. The other crawled under a leaf and stayed there. He soon spotted the one in the open, but the dash he made was for the one under the leaf: the one which I think he could not see, but which, with the aid of the dry leaf, may have been noisier. I believe he was guided by sound. The two worms were about equidistant from him. After eating the concealed one he stepped over to the other (not dashing--he had visual knowledge of its whereabouts) and

ate it. Dusting virtually under my nose now followed; then a slow march toward the cage entrance to visit the magpies, encountering the snake on the way. He was not at all astonished to find it; was mildly curious; stopped and "thought" about it a few moments and passed on. A brief visit to the 'pies; out for another dusting and he heard footsteps approaching. He crouched close to the ground and watched intently, moving cautiously to keep a bush between him and the shifting sound until he saw that it was Julio, when he relaxed, but, to my surprise, not completely.

At 5:45 he started his march to the night roost after having followed me to the oval lawn where he watched the birds and preened and once ran over to me unexpectedly from 30 feet away.

April 20th.

I found Rhody busy at his new nest at 7:45 A.M. He had used al the material I had gathered for him, so more was collected and he began to use it at once.

8:50 A.M. Rhody has been at ever since, and as he had used up the second lot of twigs, I got more by breaking them off from the shade-killed branches of one of the oaks near the nest, dropping them at my feet. His course was now altered and he made regular trips back and forth between the nest and me. To test his absorption in the job of nest building I placed a small mouse with the twigs. (Small so that in the event he had already eaten, he still might have enough space left for this addition to his stomach contents). He continued to take twigs instead of the mouse, though he did not fail to observe that creature and apparently consider eating it. I therefore, after about 10 minutes , returned the mouse to his fellows.

At 9:05 Rhody abruptly ceased work and trotted along the hedge toward the north, taking position on top of the retaining wall supporting the road and looking and listening off to the north. Something seemed to interest him there and he did not follow when I went to the shop for a mouse. On returning to him I found him now ready for the mouse, which he took with ceremony and headed at once for the cage (out of sight 60 yards away, concealed by trees and by the curve of the road) with his funny little dog-trot, pausing to look off to the north now and then with bows and so forth.

His destination was the mirror. On the way there he came suddenly upon the dead snake (which I had again forgotten, so it was a mild surprise to me also). R paused on seeing it, then made a detour of radius just long enough to avoid stepping on the reptile and went to the mirror (9:20). I then had to leave him there.

Returning about noon, R was absent; but at 12:10 was back on the job again. He quit at 1:10 and went to the west lot. He probably caught something interesting there, as I could catch glimpses of his tail wagging . When I went out to see I found him lying comfortably in his nest 4-37(in the house in the roost tree) looking off over the landscape spread out below.

At 2:10 Julio reports he was in the cage watching the magpies, and a few minutes later was waiting at the door of the tool-house (waiting for somebody to come?). Julio acted upon the parenthetical thought, went there and got him a mouse which he received thankfully, carried off 50 feet, then ate. Rhody is not exactly a fool, by any means.

At 3:30 I found him already in the cage, on his arm-chair-shelf, stretched out comfortably. J. reported him catching a lizard in the cage about 4 P.M. I was too busy to look him up until

5 P.M., when he was back at work on his new nest. He continued to work until 5:50. He then began to take more interest in me, so we went to the shop for another mouse. (This is late for nest building and mouse eating). This mouse he carried off down the lower road toward the west. Last week I had 50 cubic yards of earth dumped on the eastern end of this road, so that the first 25 yards or so that R has to traverse on the way to his roost are now greatly altered in topography. This stretch now terminates in an abrupt bank 5 or 6 feet high at the western end. (Rhody has shown that he has observed the change). On this occasion when he reached the end bank, he faced back toward me, bowed and hrooed then jumped off, exactly as if he were giving me a parting salute. Who knows? Perhaps it was.

April 21st.

At 8 A.M., while I was looking for Rhody elsewhere, he appeared outside this room gathering twigs amongst the azaleas, according to Julio. I found him at 8:10 at work on his new nest.

At 8:45 he had suspended operations in order to warm his back, but decided to follow me to the tool house for breakfast. The mouse was carried, with ritual, up to the roof of the house, to various reflecting surfaces, then to the new nest, where it was eaten. This constitutes the dedication of this structure with living sacrifice. Already this inchoate fabric seems to have become the dominating physical entity--temporarily at least--of his present reproductive cycle. No doubt it is destined to be supplanted by a new one; for, in the absence of a mate, Rhody is not content to remain static: he must be doing something. Possession of an empty nest (or nests) does not satisfy his instincts. Unable to get a mate and carry out the ordained pattern to a successful conclusion, he does the only thing possible for him to do in pursuance of the plan: build nests.

I do not think these nests are so called "cock-nests" in the sense of their being places of refuge or rest for a male bird; they are "hopeful habitations" for the rearing of offspring.

Should he get a mate and have eggs in a nest, that, based on observations of his successful year, would end nest-building activities unless a second brood were to be undertaken.

9:45 Still working. I had to leave for a few hours.

At about 1 P.M. I took my sister to see him working. He was a little shy, but continued for a few minutes more, then went off a short distance to sit in the sun. He would not take worms or a mouse.

He loafed much of the afternoon, visited the magpies, had another mouse which he displayed at the mirror.

At 6:10 P.M. he was out in the street part way to his roost.

(Sunset 6:51).

April 22nd.

At 7:50 A.M. Rhody was not working, but about three quarters of an hour later I found him busy at the nest. As I cut dead branches from the nearby trees and snipped the branchlets into suitable lengths, he came and got them and carried them up to his nest.

He appears to use discrimination in his selections and does not always take the twig nearest to hand. Often he picks up and drops several before chosing one finally. Others he also whips on the

ground, breaking off portions (these long-dead oak twigs are brittle) with the apparent intention of making them easier to transport throught the tangle or else of size and form better suited to the requirements of the structure at the time.

He showed no signs of wanting food of any kind.

10 A.M. Rhody changed his mind about the food question and on coming down from the nest, walked over to me expectantly. We went to the tool-house for his mouse. He took it with full ceremony to the mirror, returned along the route had just traversed, out the side gate to the street, tence to the Scamells' window , back across the street and then to his house in the roost tree. His new nest cut no figure in his plans at the time.

About 1 P.M. I found him at work again and then left, to return about 5 P.M.

I found him outside the cage not interested in anything at all. He did not acknowledge my arrival upon the scene in any way, yet when I walked off toward the tool house, he came and cried for attention. He was not enthusiastic about the mouse, but took it, turned his back on me and, for 10 minutes held it quietly in his bill, making no movements other than slight ones of his head, and no sound. A rattling car caused him to retreat 6 feet to a low branch, where he finally ate the mouse after another long period of quiescence (about 10 minutes). About 5:45 he decided it was time to go to his roost, hruh,- hrooed, trotted down over the new earth piles on the lower road, dusting at intervals. When he came to the terminal bank he faced back toward me, jerked up his head, gave one sidewise swish of his tail, turned about and jumped off. The period following 5 P.M. appeared to be one of almost complete indifference to all outside objects and affairs: a not unusual attitude of his when he has been well fed and there is not enough left of the day to warrant undertaking any serious operations.

April 23rd.

At 8 A.M. Rhody was sunning and preening on the observatory roof. He landed just outside this window at 8:45 and went at once to his nest.

On making inquiry I found Julio had given him a large mouse at 4:30 yesterday; R hody had caught a mouse in the cage at about 3:30 and had spent a large part of the afternoon there. Under the circumstances his later lack of enthusiasm is not surprising; in fact it is rather surprising that he took the mouse from me at 5:10

At 10 A.M. he was still working.

I did not see him again until 5:10 P.M., when he was in the act of carrying a large lizard up to his nest where it was consumed. In 15 minutes he came to the oval lawn where I sat and tried to get a drink at the pool, but could not reach down to the water level. He jumped across the pool to stand by me quietly.

I said:"Come with me and I'll show you where to get a drink", and walked off along the driveway. When I had gone about 50 feet he came running fast. Another 50 feet and I pointed to a glass of water under a hydrant, stopped, pointed at the glass (which was about 8 feet off of our course) and said: "There's your water; go and get it". He went over at once and began to drink thirstily. Now this is not one of those instances where I anticipated his actions and gave"commands" which a bystander might think he understood and obeyed. I had no thought that he was going to the glass for a drink, and I do not think now that he ahd any such intention as regards that specific drinking place. Of course I thought he was thirsty, but I had never invited him to follow me

to get a drink before. He was thirsty and as he has been accustomed to follow my lead when he is hungry, so now thathe was thirsty and saw no immediate, practicable means of satisfying that thirst, it was natural for him to accept my guidance in this emergency. As to what influence my pointing had upon his action, I think it not at all improbable that it did direct his attention to the glass of water: not necessarily as a human being's gaze would be directed by pointing at an object, but that the movement of the hand and arm in a certain direction would be followed by the bird's eyes beyond the limit of the gesture and the glass thus seen by chance. It has been shown in these notes that Rhody had some conception of the probable landing point of a tossed worm(when one caught in a bush over his head he looked for it in the place where it should have struck the ground).

It has also been shown (unless I am mistaken) that he, Archie and Terry have all also responded to pointing at pieces of meat.

At about 5:50 I invited him to the tool-house for a mouse, doubting if he would come (after the recent lizard --also the lateness of the hour) but he did, and was quite polite about it: bowing and hrooing, even though he ate it almost immediately.

He did not leave for his roost until after 6:10 .

April 24th.

R was not working at 7:30. Ditto 8:30 A.M. Ditto 9:30.

At 10 A.M. he was seen over at Nichols' about 50 yards north of the cage. He cried when he saw me (I could not hear it) but did not come until I had started to walk away, flying over the fence and following to the tool-house. This mouse was taken to the main roof after having been shown. with ritual, at the north windows of the shop.

At 12:15 he was again (or still?) up there, but shortly went to interview the magpies. However he soon wanted another mouse and came to the regular place for it. (After a spread-eagle sun-fit followed by neck scratching). This mouse, with display, was taken to a new place: the west window of the observatory tower, reached by a narrow ledge that goes all around the tower.

I did not see the end of this, as I left, returning at 4:10, meeting him as I approached the cage. Result: Aother mouse at the tool house. This time display at various points along the north road: one of them on both sides of a half opened casement window of the laundry in the basement, showing that it was not the interior of the basement that attracted him. From there the mouse went to nest 8-37 (the new one) and was eaten at once. After a rest in the nest of 15 minutes he was down, ran past me at the oval lawn, past the cage and to a place much favored by him to lie and sun near the loquat tree. There I left him for the day.

Rhody now is no longer seen at his post on the west lot.

He roosts in the same tree.

He has not been heard to sing for many days.

He has ceased to follow me after I have given him food.

April 25th.

Rhody was not seen working at his nest at all today.

At 10 A.M. he was on the observatory roof with a lizard, taking it to his 8-37 nest later.

At noon he was in the cage watching the magpies and wanted no food. At 1:30 he came for a mouse to the tool-house and took it to the mirror and there displayed.

He remained in the vicinity of the cage practically all the rest of the afternoon, a large part of the time lying quietly on the ground between the cage and the loquat tree and occasionally visiting the magpies.

At 5:30 he followed to the tool-house and cried as I was getting a mouse for him, but something caused him to go into a semi-frozen state (Boys on the street below playing "catch"?) and he would not take it until about 10 minutes later, when I offered it to him in another place. He took it , not very enthusiastically, but still with his unique ceremony. He dropped it unexpectedly and bolted at great speed. I thought he was frightened again, but he had gone to capture a salamander, which he had evidently detected at least 30 feet away. He is not especially fond of these creatures, and it was a surprise to see him abandon a mouse for one of them and carry it off to the west, according it full honors--the first time observed in the case of a salamander.

hody's pupillary ring.

These notes have commented upon the brassy ring which surrounds the pupils of the eyes of road-runners. Amongst other things it has been stated that the ring expands and contracts with the pupil, but that I could not be certain that its width changed as its diameter varied. When Rhody was in his semi-frozen state his pupils were greatly dilated and the brassy ring was thinned down almost to a hair line. The forward portion of it, which is always thinner in all road-runners of my acquaintance, had almost disappeared. It would be interesting to know the mechanics of this action, and the reason why the ring's inner and outer boundaries are eccentrically related to each other.

April 26th.

Rhody was not seen until about 9:15, when I caught sight of him about 100 yards off to the north. Calling brought forth no results at first, but soon he began to work his way toward me in leisurely fashion through the brush: his pace quickening as he approached the fence; he flew up and over and beat me to the mouse place by taking a short-cut and was already waiting for me, crying as I approached. The mouse was taken directly to the mirror with full honors, and I left him there in order to work at redistributing the earth on the lower road preparatory to planting.

Although I looked for him casually two or three times I could not find him. About noon it began to rain (the first time in 2 or 3 weeks?). Almost at once three rattle-boos sounded from the northeast. Rhody, as if protesting against this sudden change in the weather. I found him in the shelter under the old oak, prepared for such emergencies, where he remained until a lull in the storm permitted him to go and flirt with the magpies without getting wet.

At 1:15(Raining) I found him back in the shelter, crying on seeing me. This time he waited until he saw I had reached the tool-house door before he followed, waiting outside,patiently at first, but when I purposely delayed delivery in order to observe his reactions, he began to walk back and forth rattling his beak softly, as if in protest. I really wanted to see if he would come inside to get out of the rain; but for some reason he has always been averse to entering this place. Finally I gave him the mouse and he very practically carried it directly to the shelter, pausing once on the way to bow and hroo his thanks.

At 2:15 (Raining drearily) I found he had shifted to the shelter of the garden bench with the mouse.

At 2:15 he was still there. The sun now came out for a few minutes; the paths and bushes began to steam and Rhody wand~~d~~ered off; I went back to work; the sky again became heavy with clouds, but there was no more rain during the afternoon.

At 5 P.M. I went to Rhody's night roost to see if the chilly, gloomy weather had caused him to advance his roosting time; but it had not. At 5:45 he was sitting on top of the cage, but came down to get a mouse at the tool house. One short bit of ceremony and he downed it. There was now nothing more to be done, so he remained standing by me, doing exactly that. This is the period of the day when, his appetite satisfied, it is too late to search for a mate and build nests, and too early to go to bed, consequently there remains no inducement to further activity. I watched him for a few minutes longer (until 6 P.M.) then left him there.

April 27th.

The day dawned cloudy and chilly.

Watching a Road-runner "Mouse-Cycle".

About 9:20 A.M. I began looking for Rhody, but he was "nowhere." However he had apparently observed me and came up behind me from "somewhere", eager for a mouse, bright and animated. On receiving it at the tool-house he immediately began his ritual (9:30) and for the next hour and ten minutes during which I never lost sight of him, his horizontal tail-wag was almost continuous, ceasing only at such times as he became intent upon some distant sound or scene, or sat down to catch a few sunbeams on his back each time the sun came out for a few seconds; or for the five minutes during which he sat on the thin top wire of the fence and could not risk disturbing his balance by unnecessary gestures.

The mouse was not taken directly to the mirror at the cage, but over the north fence and through the bushes of the slope parallel to the fence and about 10 or 15 yards away, in a general westerly course. Progress was slow as he threaded his way through the chaparral, walking slowly and covering but 2 to 5 feet between pauses to bow, hroo and wag his tail with greater vigor. (His tail is so heavy that his body"wags" too as a compensating counterbalance). After about an hour of this he flew up to the fence near me, then headed for the mirror at the cage,at last, by way of a shop window, then to nest where he ate the mouse at once.

He was not observed again until 2 P.M., when Julio gave him a large mouse, which he ate at once. He then repaired to his present favored loafing place: between the cage and the loquat tree and for more than two hours, was not seen to shift from the spot where he lay in the sun, or change his posture. Until nearly 6 P.M. he was still within a few feet fo the same place.

April 28th.

Rhody was not seen until 12:30 P.M. Although I was looking for him at that time, he found me first and followed promptly for a mouse--a very lively one which he had to drop 2 or 3 times and recapture. I had to leave without observing his further behavior, and did not return until about 6 P.M. Julio says he came for another mouse about 3:30 P.M.

R seems to have lost all interest in his nest by the living room window and I would not be surprised if he had discovered another place in which a nest "just has" to be built and is now engaged

engaged elsewhere and away from this place.

April 29th.

Up to about 10:30 A.M. Rhody had not been seen. I left to return about noon. Still away. Left about 2 P.M, returning about 3:30. R not to be found. I sat by the cage to watch for his expected visit to the magpies, but he did not appear. I went to nest 8-37 at 4:15, not expecting to find him, but there he was, lying in it peacefully. He cried when I spoke to him and then began to poke at the interior aimlessly with his bill. He did not come down when I walked away, but when I passed the nest a few minutes later, he followed to the tool-house for a mouse, then carried the mouse back to the nest with ritual after having made a complete circuit of the house.

Going back at 5:40, I found him on the ground below the nest. He followed me to the oval lawn, but no farther. There he became interested in watching the birds: quail, brown towhees, plain titmice, linnets, Nuttall sparrows and bushtits that happened to be active and fairly numerous in the vicinity at the time. He suddenly crouched, turned his head on one side to gaze up into the big oak by the front steps. A Steller jay then squawked from that tree and Rhody instantly flew up into it as if he recognized the jay as a hereditary enemy, as perhaps he is. The jay left quickly, but R spent several minutes studying the inside of the tree, which is very open. Though there were other birds there, he made no hostile move towards them. On leaving he dropped to the ground, then made his way to the side gate--not on the ground--but via the branches of trees--a mode of progression not commonly adopted by him. .

April 30th.

Rhody was again absent most of the day; not being seen between 7:45 A.M. and 4:50 P.M., although frequently looked for both here and over a considerable area to the north and east.

At 4:50 I came upon him under a pine tree near the north fence as I was stalking a hawk (Sharpshinned?) that had just caught a bird in the garden and flown off with it.

Rhody was holding a snake in his bill and was in a semi-frozen state due to the yelling and shrieking of about a dozen little girls 150 yards to the west. He did not thaw for 35 minutes; he then began to beat the snake upon the ground following a preliminary bow with hrooing and tail-wagging, but was still afraid of the children. The snake, 18 to 20 inches long--a yellow-bellied racer--was still alive as Rhody came over the fence with it on a slow, intermittent march which lead him to the ladder tree at 5:40. On the way he hesitated at the base of the 8-37 nest tree, but did not go up. He passed out the side gate and offered the snake at the hub-caps of two cars in front of the Scamells' saying coot, coot, coot. At the ladder tree, for the first time, he was seen to retreat from his last position instead of making the la leap across. This happened three times: once when 5 of the little girls passed on the street below, again when they returned in the opposite direction and again when another outburst of shrieks coincided in time with his crouching for the take-off. During a lull in the shrill clamor he made his fourth approach to the end of the branch, waited there a minute or two, then jumped to the roost tree (6:26½ P.M. Sunset 6:59) took the snake to the house-nest and downed it in 10 or 15 seconds--a rather speedy performance.

and [illegible]
[illegible] to the [illegible]

May 1st.

At 7:45 A.M. Rhody, as silent as a clam, was warming his back on the Scamell roof. He made no response, other than to turn his head and look at me, when I called to him.

At 8:35, as I was walking on the driveway near nest 8-37, in a crouching attitude in order to look through a gap in the foliage to see if R was still on the roof, he popped out almost under my feet, ran to the supply of twigs which I have provided for him and resumed work on nest 8-37.

Half an hour later he was ready to knock off work and trot along behind me to the mouse habitation. The forthcoming mouse was taken to the mirror with full honors; next to his newly discovered window high up on the west side of the observatory tower; next across the street to the Scamell roof, where he sat for perhaps an hour: I had other affairs to attend to.

At 11 I found him in his nest (8-37); my arrival causing him to cry and suddenly resume work on its interior. Now for a walk through the garden, winding up with inspection of the magpies. Arrival of three visitors (young men) at the cage disconcerted him slightly; he came out but did not run away. The next I saw of him was up on the chimney of the house: for a long preening--until about 12:30.

At 1 P.M. he was working at the nest.

At 1:10 he had discovered, below the south window of the living room, a new place to do his spread-eagle sun-fit: several in succession, each followed by neck-scratching and retreat to the shade of an orange tree to puff until cooled off enough for another go at it. A few loose feathers floated off. An upward flight to the window ledge was now followed by a return to work on his nest (1:30).

Rhody appears domestically inclined today --just as I had made up my mind that, today, I would trail him and see where he has been going lately when he has disappeared!

For the rest of the day he stayed about the place, working a little, loafing a lot, visiting the magpies and, once coming for his second mouse, which he ate at once.

May 2nd.

At 7 A.M. Rhody was not in sight.

At 7:30 he rattle-booed from the Scamell roof, where he was enjoying the scenery between preening operations and sunning his back.

At 8:15 he announced his presence on the weather vane of the observatory roof--the first time he has been known to sit on the vane itself--a place where, for several years I have hoped to be able to get a movie of him. (This weather-cock is supposed to represent an astrologer having his first look through a telescope and "registering " astonishment at the discovery that there is something in the sky after all. In this case: Saturn). By the time I could get my camera set up he had moved to the chimney. When everything was ready to "shoot" him there, he decided to come down and see what it was all about and hung around me like a fly about molasses. In order to get some action, Julio offered him mouse and meat from the dining room. This was better than nothing and I used up a few feet of old film on him. (Came out surprisingly good.)

This mouse was taken by a devious route to the motor car in front of the Scamells' and then to the house-nest in the roost tree, where he huh-hrooed repeatedly before gobbling it, then composed himself for what appeared to be a good rest. (9:05 A.M.).

(Temp 70°)

About 4 P.M. another mouse was given him on application at the tool-house. This one was presented at the mirror and then subjected to the same routine as the preceding one.

May 3rd.

I had little time to observe Rhody today, but he had two mice and took a lizard of his own finding to his nest 8-37.

May 4th.

Away most of the day, but returning at 4:30 P.M. , Rhody ran away when startled by my car as I passed nest 8-37. He did not go far and soon came back to carry twigs to the nest, then trotted along behind me to the tool house. This mouse went through the routine of mirror, motor at the Scamells' and was carried to the house-nest in the roost tree at 5:15 P.M. I do not know whether this can be considered as roosting time or not. No effort was made to check up later on it.

May 5th.

I did not see Rhody until noon, being very busy. At noon I looked up at nest 8:37 and he began to cry. I walked off, but he did not follow. About 15 minutes later, when I was working 50 yards away on a concrete form for a rhodendron moraine, a soft hruh, hruh, hroo-o-o-o sounded close by, and R was standing 8 feet away looking bright and expectant. I got out of my excavation and he turned toward the tool-house, keeping about 6 feet in front of me, looking back at me and stopping to let me catch up . I let him keep the lead and he took me to the tool-house door then stepped aside and I entered. He now watched and cried. I gave him the mouse he wanted.

There can be little doubt that his call was for me and that he w wanted me to get him a mouse. The initiative was his in every respect. The stepping aside at the door looked like an act of courtesy, but, as I have pointed out before, he does not like to enter that place; furthermore, he did not care to be run over, and while he is not, I think, afraid of some act of violence on my part he is, nevertheless, careful about allowing himself to be cornered. In other words: He was not afraid of me as birds are supposed to be afraid of man, but as any animal (man included) fears the too close approach of a large moving object uncontrolled by him.

Rhody did not report to me during the rest of the day, and at 5!20 he was not to be found.

May 6th.

At 6:30 A.M. (Cloudy) Rhody was heard rattle-booing off to the south west. I did not see him until 10 A.M. He was then sitting quietly on a pile of earth in the garden under construction at the Nichols' place north of the fence. He was not interested in me at all, so I returned to my job of mixing concrete at the gravel bin about 40 feet from the cage and a hundred feet from Rhody, but where he could see and hear me. In about 15 minutes he came, without being called and gobbled a large centipede which I had tossed out into the open a few minutes before. He now waited patiently for action on my part; so I went to the shop, followed by him and gave him a jet black mouse. This he carried without ceremony to the place where he had caught the centipede, killed it,

kept an eye on a hawk circling far above, abandoned the mouse and disappeared while I was not looking, and could not be found. So the mouse was given to the magpies. In a few minutes R hrooed behind me, where he had left the mouse. He cried and, between cries, rattled his beak softly. I tossed him a few worms, but he continued to cry and lost interest in worms. This meant mouse preferred, so another procession to the tool-house, and, this time a white mouse.

This received full honors: long presentation at the cage door, at the mirror, then up inside the glass house in the dormitory tree where he built nest 2-37 (4-36). Instead of eating it there as expected, he offered to his reflection on the inside of the house. (He has not been seen in this place for weeks). He now followed his route which usually leads to the roost tree, and, though I did not follow, I found him in his nest-house there at noon time. He was lying still in the nest, but after I talked to him, stirred guiltily and began rearranging the inside of the structure.

Evidently this was to be a day during which Rhody was to experience no special urge to do anything in particular.

At 1 P.M., when I went back to work on the moraine, I found him there with nothing apparently on his mind--just loafing. However, when I went to the tool-house to see what he would do about it, he came too, watched me take a mouse out of the cage, then wandered off to sun his back and to climb up to the roof a little later. Next he visited the magpies for a half hour, then went to sit in nest 8-37; next another visit to the magpies, wandering about the garden, etc. About 4 P.M. he began to keep pretty well posted on my doings, so at 4:30 I went to the tool-house, promptly followed by him. The big mouse I gave him was eaten at once, without ceremony of any kind. (I wonder if his reproductive urge is waning).

Now followed a long rest in the sun near the loquat. At 5 P.M. he was still there.

May 7th.

(A trace of rain during the night; apparently clearing sometime this forenoon). (Later: It cleared as expected).

At 10:40 A.M. Rhody caught sight of me inside the garage (under the west end of the house--I had just been looking for him at his night roost--perhaps he had seen me). He stopped, cried and then as I talked to him, rattled his bill softly. He followed at once to the tool house along the north road. The mouse received full honors, but was taken over the fence to the north to the Nichols' garden. I left him there and returned in 10 minutes. The mouse had disappeared (eaten?), the Japanese gardener was at work; R was walking about near him. The gardener had not seen him with the mouse in his possession. R wandered off to the east. In a few minutes (10:55) I heard him rattle-boo sonorously several times in succession and saw him running rapidly toward me, on the other side of the fence. I was carrying stones to use at the moraine and my course passed by the short walk leading to the tool-house. To my surprise Rhody followed close after me, but diverged at that point and went to the tool house. I laid the stones down. R cried as I passed him. He wanted another mouse! This one, with ceremony, was taken down the west road and I did not follow.

I assumed it had followed the regular route to the house-nest. If so, R made a rather quick job of it, for a half hour later he was loitering around and on top of the cage until about

noon, when he went to nest 8-37 and worked on it in rather desultory fashion until about 2 P.M.

When next seen he was visiting the magpies, but abandoned them as soon as he saw me and tagged after me to the tool-house, got his mouse, displayed, looked for no reflecting surfaces and went down the north road. Arriving near the garage, he found a stranger (man with a motor tricycle) between him and his nest, so made a long detour and arrived at nest 8-37 at 5:10 P.M. and ate the mouse there. He remained quietly lying in the nest until 5:50, when, after a brief survey of activities of birds about the oval lawn, he started for his night roost at 6:00 P.M. While making his inspection he rattle-booed so frequently that it seemed that it should have some special significance; but unless it was in some way connected with the discovery of the other birds, I can think of no inciting cause.

May 8th.

Up to about 11:30 A.M. Rhody was busy at the nest, had two mice--both treated with honors--strolled about the upper garden and was altogether very domestic in his behavior. To make up for this he disappeared for the rest of the day.

May 9th.

At 8:15 A.M. Rhody was not in his nest 8-37, nor was he to be seen anywhere about the place.

At 9 A.M. he found me using the garden hose near the cage, wiped his bill thoroughly on it, then came to me without any greetings whatever. He wanted no mice, but preferred to hang around doing nothing. At 9:30 he was comfortably installed on the roof of the cage, lying where he could watch the magpies.

His wings are short, thick and rounded, reminding one of the wing case of beetles, and in lying down, he has the odd trait of lifting them slightly and taking great pains to see that their edges are neatly fitted together over his back.

I now had to leave for the rest of the day.

May 10th.

Julio informs me that yesterday R was about the place most of the day, in and out of the cage, working at his nest, but, wanting neither mice nor meat.

At 8:15 A.M. today he was working on nest 8-37 and cried on seeing me, but wanted no food. At 9:15 he was still working. I got him a fresh supply of material so that he would not have to go so far for it. He adopted it at once.

It was noted that his plumage is becoming more unkempt. This I attribute both to the progress of his moult and to the rough usage which it undergoes in working on nest 8-37, which, due to the surrounding growth's being dense, is the most difficult place for him to reach and work in of all the sites so far selected.

He has surprised me by working so long on this particular nest. I expected him to start another one before this.

9:50 A.M. Still working and refusing invitations to follow to the tool-house. He has found that the support at one side of the nest is insecure and that branches overhead interfere with his work, so he is extending it toward the north. It is now long and narrow. He is all "mussed up".

10:30 A.M. Still working hard and refusing to follow to the tool house. He does not pick up twigs at random, but makes sel-

An orphan hummer.

Trapped orioles.

ections and rejections as if having formed some judgment as to the immediate requirement of the structure at the stage of construction reached. (10:05 P.M. At this point I received a telephone call which necessitated my going out to Berkeley to take charge of an orphan humming bird. Before completing this task I was asked for help in connection with the illegal trapping of 5 Bullock orioles. I have been busy on this ever since).

May 11th.

At 6:30 A.M. the orphan hummingbird, an Anna's, probably just out of the nest yesterday, opened his bill when the cover was removed from the cage and kept it open until he was given a squirt, with the medicine dropper, of the same kind of food on which the other humming-birds were fed earlier this year. The juices of a meal-worm were now added to this mixture and a small bottle of the combination placed in his cage. When the bottle was held up to him he first nibbled at the edge of the neck, then licked the outside and then finally discovered the proper method to get at its contents. From that time on he recognized the bottle as a container of food and it is no longer necessary to feed him by hand.

This bird appears to be absolutely devoid of fear of man, but he watches everything curiously. He can fly well; but hovering flight is beyond his present capabilities: consequently his food has to be placed near a perch. He is all gray except for a slight green wash on his back. He sits quietly in one place, does not fly about in the cage, occasionally preens, stretches and buzzes his wings. Before he was able to feed himself he called for food with a little chirping note of extremely high pitch. Now that he knows the ropes he does not do it.

Mr. Brock and I, after interviewing the U.S. Biological Survey local officials last night, took the orioles out to the place where they were captured and released them. I had previously located oriole nests under construction at that place (3 or 4 days ago) and suspected that the captured birds were the builders. This view seems to be borne out by the fact that, before release, we could hear and see no birds at or near these nests. We contacted the local officials of the San Francisco City department under whose jurisdiction these lands fall, also one of the State wardens and were promised cooperation by them with the Biological Survey and with ourselves in an endeavor to prevent illegal trapping of birds in the future.

On returning at noon Rhody was found in the cage. He wanted no food and seemed inclined to a long period of leisure.
1 P.M. He is still loafing. For some time he has been neglecting the meat in the cage, preferring mice and the results of his own hunting expeditions; but during the last few days he has rather leaned toward meat instead of mice.

2:45 P.M. Rhody, during his loafing period, has been using the spread-eagle sunning pose frequently, and the open-bowl type not at all. This means air temperatures in the court --not necessarily at the point where he is- which may be higher--not lower than 65 or 70 as a rule. To check this I just looked at the thermometer in the court: 74 deg. I have just given him a mouse at the tool-house. He was first interested in looking into his meat dish in the cage, which was empty. When he discovered that fact he immediately came toward me and followed to the tool-house, though he just refused to do so a few minutes before. It would seem

that mouse was distinctly second choice on this occasion.

Correction 3:10. This observation was incorrect: I find there was meat in his dish, but he preferred mouse instead of vice versa.

Although the temperature is only as stated (in the court) R pants in the sun and is cooling off now in the shade with spread wings. See how the road-runner adjusts himself to the cool coastal climate.

Each of his spread-eagle poses was followed by neck-scratching as usual; then by general preening and casting off of loose feathers from the body.

Rhody Leads Julio to the Mouse Habitation.

At 4:30 P.M. I found Rhody lying quietly in nest 8-37. He began to cry on seeing me. He had used up all the supply of building material I had placed on the road for him, so I got more for him, but as he did not come down for it and as I did not think that he wanted another mouse so soon after the big one given him at about 2:45, I returned to the house without paying any further attention to him. However, I had no sooner seated myself than I heard Julio, who was watering the garden near the nest, talking to R, so I went out and found J starting for the tool house and R following. I called to J to stop and let R show him the way to the mousery. This had not been tried before. I wished to find out if Rhody would do it with Julio, and if so, witness the action as a spectator instead of as a participant. R stopped when J did, about 150 feet by road and path from the door of the tool house, the route to be followed containing one reversed curve. I told J to wait and let R take the initiative. R passed J and stopped 10 feet in front of him. J was instructed to move up on him and was told that R was really waiting to see if he would follow; which was true, as he moved on a few feet, looking back at Julio and waiting each time that J stopped. Julio had not had this experience with Rhody and was afraid that R would think he was being followed for some ulterior purpose and become frightened, so J kept stopping--R following suit. I explained to J that R wanted to be followed, that he would lead the way to the tool-house and would wait there for J to get him a mouse, but that he would step aside off of the path to get out of J's way when the door was reached and then step back again and wait for the mouse. And that is exactly what took place, to the tremendous delight of Julio, and I must admit, to mine. R took this mouse to the mirror to display there and I came in to make this note without observing further action.

At 6 P.M. I stopped at his roost tree as I was about to drive by and could not see him, but when I called, he stuck his head out of the nest-house and cried as long as I stayed there.

R's moult. Rhody is becoming progressively more ragged. When he was in one of his spread-eagle poses on top of the cage this afternoon and I could see the under surfaces of both wings, it was seen that there was a loose flight feather under his left wing. It seems probable, therefore, that he will be losing wing and tail feathers shortly.

May 12th.

Rhody was invisible at 7:30 A.M., but at 8 he whined at me from his nest 8-37. I picked up one of his tail feathers from the road beneath the nest: the first shed this year. (It appears to be ~~the~~ one next to the middle pair of rectrices; but it will be necessary to have a good look at his spread tail before I can

be certain. (See p 1450)

1:15 P.M. Rhody continued to work earnestly on his nest until a little after 11 A.M. He then disappeared and I have just located him at the cage "spread-eagling".

At 2:30 he was on top of the cage with a small lizard, showing it at one of the windows.

At 3:50 he was back at work on 8-37.

4:15: Still working.

(Dr. and Mrs. Grinnell are due here between 4:30 and 5 and I am hoping Rhody will stay on the job and am avoiding all moves that might be interpreted by him as invitations to come to the mousery).

4:45. Rhody has disappeared! I can't find him anywhere.

(The remainder of this note written May 13th.)

Dr. and Mrs.G and their son Richard arrived just a few minutes after I had given Rhody up. However, perhaps three quarters or a half hour later, when we were near the cage, Mrs. G spied him on the driveway headed for the cage. He stopped on being hailed, and dusted, then continued to the cage. I did not want him to eat the meat there, as I wanted the G's to see what he would do with a mouse (or a lizard) so I followed him into the cage and took the meat just as he was about to take it from the dish, then returned to the G's. R soon followed directly toward the group. When he reached us he stopped. I did not lead the way to the tool-house, as I wished now to demonstrate that he would now go on the rest of the way himself and wait for me. And that is what happened. At this moment, however, a delivery truck roared up the road and passed between R and ourselves. R. of course, sought cover. This gave me an opportunity to get the lizard from where he was "held in reserve" and a mouse. The truck now departed and R presented himself , coming from the direction of the tool-house. He was a little shy, but for the first time in his career, voluntarily approached a group standing in the open, where a woman was present. (Not quite correct: He did this 2 Or 3 minutes before!).

I now placed the lizard and the mouse at my feet in the open road perhaps ten feet from the visitors. R showed a disposition to keep me in between as a buffer. Neither lizard nor mouse stirred. When R got ready to make his selection he flirted his wings (shrugged) once. I said:"That means he wants the lizard"-- a rather risky statement to hazard, yet, by precedent, such was the probability, and fortunately (for my reputation as a prophet) it ~~wa~~ was the lizard that he took. Retreating a few feet he bowed, hrooed deeply and tail-wagged vigorously. I think (as he did not retreat further for some time) he wanted to take it to the mirror but was deterred by the presence of the group in the line of approach to the cage. In any event, he now continued west along the north road, stopping to bow, hroo and so forth. I thought he would take the lizard to nest 8-37, but he went past it and down into the street to the cars in front of the Scamells' and, when last seen, was headed for his roost tree.

May 13th.

At 8:15 R was not working, but at 9 A.M. he was very busy at 8-37. It has been recorded that he has started an extension of ~~thi~~ this toward the north (really N.E.). His whole structure now is roughly in the outline of a figure 8, as if the new portion were intended to be a complete nest in its own right, so to speak. These notes have shown that this particular nest has received his attention for an exceptionally long time, and that I have expected it

had

it to be abandoned in favor of some unknown new location. On the other hand, it has been pointed out that 8-37 is cramped for space (particularly now that it is so bulky) and that R, being acutely aware of that fact, has extended it.

We are now, therefore, confronted with the problem: DoesRhody "consider" that this is a new nest and does this extension satisfy whatever urge it is that impels him to abandon one nest and to start another, or is it the same old one? Is this still 8-37, or is it 9-37. Is it 8-37 physically, but 9-37 "spiritually"?

Hummer.

The little Anna's hummer, being now full of pep and able to hover in one spot was released at 9:30 A.M. He flew to a wild iris flower at once and behaved with professional precision, thence directly upward to perch 10 feet up in an oak.

At 10:10 Rhody was very kittenish when I called to see him in this new creation of his, and ran back and forth between the two(?) nests. When I turned away he followed to the tool-house, without a pause. I walked at a rate of about 4 miles per hour, or perhaps somewhat faster. He did not need to break out of his trot to keep pace. (This distance traversed by the route taken is, by scaling the topographic map which I had made of this property in 1926, precisely 86.5 yards). This mouse was received with ceremony and he also knew just what he wanted to do with it, which was to take it to the Scamell window first, then to his house in the roost tree, where he arrived at 10:25. By the route taken, about 200 yards.

Mr. Sampson's thrashers.

Leaving Rhody, I went to Mr. Sampson's to look at his thrashers. Thrashers have nested at his place for 3 or 4 (?) years, and we have thought that Brownie was perhaps their male progenitor.

They have two youngsters and Mr. Sampson has suggested, that as they will inevitably be driven away from his place, I take them at the proper time, keep them for a short time in the aviary and then release them, and one or both of them may adopt this as their territory. (I think it probable that B will have a successor here anyway, since thrashers are seen here now and then and it does not seem probable that they will overlook the possibilities).

I found two strapping youngsters in the nest, eager for food, and gave them meal-worms, their parents not objecting very seriously and shortly permitting me to stand on the ladder without their departing, with face 2 feet from the nest, an adult in the nest.

The chicks can not swallow, as yet, anything merely placed in their mouths, but, if offered a finger at the same time, use that as a ramrod.

May 14th to 16th., incl.

On the 14th. Dr. Grinnell arrived here about 7:45 A.M. to accompany me on a short run into the Sunol Valley in the S.E. portion of this county. Rhody was already observing affairs from the chimney top. He had not been in his night roost at 5:30 A.M. In summer and spring he is a much earlier bird than I am, but not in winter. Before we left (7:58 A.M.) Rhody had installed himself comfortably in 8-37 with no apparent intention of coming down at all. On my return here at 3:30 P.M. I found him loafing at the north side of the house without the slightest interest in mice or me, so I left him to his own devices for the rest of the day. Julio says he was given nothing during my absence as he was away all of the time.

In going through Niles Canyon on our run, I was surprised

to see a road-runner drop down to the road from a tree ahead of us, run toward us and turn off to one side. When we reached the place where he disappeared we found him sitting calmly on the stone wall that supports the road, showing no sign of fear, not more than 15 feet from the car. When we stopped the car by him he continued to sit there, so I got out to see what he would do about it. This was too much for him and he sailed down from the wall, but not in panic. In the past 25 years I have driven through this canyon many times and this is the first road-runner I have seen in it.

Dr. Grinnell took a census of birds at various stopping points with results which, I believe were gratifying to him--especially the recording of an Arizona Hooded Oriole in Hayward.

On the 15th. Rhody was not seen here until 3 P.M., when he suddenly appeared on top of the cage, coming from the north, and immediately ran to the meat dish to get his meat. Half on an hour or so later, after a good rest with spread-eagle sunfitting followed by neck-scratching, he received a mouse in the presence of a visitor (K,H,D.) treated it with full honors, mirror included.

On the 16th. he was on the observatory tower when I left at about 10 A.M. At 3 P.M. I instituted a search for him on the west side of Dimond Canyon and inspected an old nest of his there. No Rhody, but when I got home he was sitting on the fence, cried, followed to the tool-house, (about 125 yards) gobbled a big mouse without ceremony.

May 17th.

At 9 A.M. Rhody was inspecting an automobile standing in the driveway, but was pleased to come and get a mouse, which he ate without ceremony. I incline to the belief that his mating urge is on the decline to a certain extent.

At 1 P.M. he was lying, inactive, in nest 8-37.

By 2 P.M. he was inside watching the magpies.

At 2:30 (Reported by Julio) he wanted no mice.

At 4 P.M. I found him again amusing himself with the magpies. When I sat down to watch, he came out and stood quietly by my chair Thinking he wanted food, I went to the tool-house, followed by him without enthusiasm, though he waited patiently at the door while I got a mouse. He looked at it, kept his place and cried. I got a tiny one. Same result. I offered him worms; he would not catch them and would not pick them up. He still cried. A pair of Brown Towhees now came with alarm cries. (They have a nest, from which the young have just departed, about 20 feet from where R and I were The youngsters were probably concealed in the shrubbery nearby). Rhody immediately became bright and interested, moved two or three yards to a branch that he favors, and began to scrutinize his immediate surroundings: ground, trees, bushes, without moving from his perch. The towhees calmed down and took up position just below the road-runner and remained there for several minutes. R made no hostile move, did not search for the young birds and composed himself for a good rest. The towhees seemed to abandon the thought that he was a source of immediate danger and went about their business of searching for food.

Rhody next was seen at nest 8-37, where he remained inactive until nearly 6 o'clock. He then departed, presumably, for his night roost.

May 18th.

At 8:45 A.M., as I descended the steps leading to the drive-

way by the oval lawn, a tawny shadow dropped down from the back of a bench ten feet to my right and placed itself directly in my path, amost at my feet. Rhody. He now waited to see "what I was going to do about it". It was just as if he had been waiting for me, as perhaps he was. He took two or three steps away from me, waited, making impertinent movements of head and tail. When I advanced a step, he moved enough to maintain his distance, then waited. After this was repeated a few times he seemed to be satisfied that my intelligence was of high enough order to encompass the fact of his being mouse-inclined and so he took a good lead, moving faster.

All this resulted in his receiving a mouse at the tool-house. This time he was very animated in his bowing, hrooing and tail-wagging, and while his "cerebral vortex" caused him to deliberate long between moves, when his mind was once made up, he moved with umusual rapidity to the various points at which he was to show the mouse. First, a good session with his counterpart at the mirror, followed by a period of reflection and peering in various directions for a clue as to the next step to be taken. The decision was in favor of nest 5-36. Instead of eating the mouse there, as expected, he went through his ritual in the nest; found no solution of his perplexities there and sailed back to the mirror. Business finished there, deep thought pointed to window of the Scamell house (out of sight 150 yards away) as the next best probability. Rapid transit over his standard route brought him to the sidewalk in front, but a new dog staring at him from behind a gate, impelled him to run rapidly down the street to the west and cross over to the west lot, thence to the ladder tree. This was traversed in three minutes (a redord for him ?) and he was in the house-nest in the roost tree. Still he did not eat the mouse, but continued his ritual in the house, occasionally coming out of it as if to continue his journey to a new objective. Apparently he could not think of one, so after 10 minutes, gobbled the mouse and settled in the nest. There being no immediate prospect of further action: I left.

During the rest of the day he was about the place much of the time: doing a little work on nest 8-37; having a long bout with the magpies, in which he got very excited, rattling and rattle-booing. This performance covered a period of two hours, with occasional rests.

About 5:30 P.M. I induced him to stop his nonsense and come to the tool-house. He stationed himself about 3 feet in front of me, looking at the mouse with indifference. The sun was directly behind my back; Rhody was facing me; I was crouching on the ground. Rhody, still keeping his place, now began a long series of efforts to disgorge a pellet. I could look directly down his brilliantly illuminated gullet. He opend his bill to its fullest extent, occasionally shook his head from side to side;"rocked" it about a horizontal axis and scratched the under side of his neck wiith his right foot (not using the left at all). His gullet could be seen to collapse. Sometimes his neck was fully extended, at others drawn back between his shoulders. In the latter position that portion of his throat just to the rear of the tongue tended to "turn inside out" and be pressed upward against the roof of his mouth. In the former position this did not occur. This performance lasted two or three minutes and accomplished nothing tangible.

He finally abandoned it, but continued to wait in front of me. This meant (as proved later) that the mouse offered was too large. Consequently a smaller one was produced. He was coming to get it when a car (K.H.D. and wife) came up the driveway and he retreated precipitately.

G.K.P

The car parked 20 feet away in the road. I induced R to come back. He tolerated K's getting out, but bolted when E appeared. He went back to inspect the magpies. I suggested to the visitors that theyget back into the car and he would come back; and so he did, taking the mouse to show it at a hub-cap. Here he was disappointed because the cap was not nickeled. In looking for a suitable place he climbed into the car, but shot out on discovering the occupants. He then wandered off, presumably en route to the roost tree.

R's tail moult. In watching R's display for the magpies it was noted that the only missing rectrix came from the right hand side and it is not the one next to the middle pair, but the next shorter one. Reference to the diagram made of R's remaining tail feathers after he had lost 7 last   shows that the moulted feather is one of the three old ones.

May 19th.

Rhody was found working hard at nest 8-37 at 10 A.M. At 11 A.M he came down and followed for a mouse. Ceremony followed . Route covered included mirror, roof of observatory, kitchen chimney, patio and a bench at the oval lawn that he has begun to favor as a resting and preening place. The mouse was disposed of somewhere before he appeared at the bench. As the 12 o'clock whistles were blowing R reversed human procedure and went back to work, but at 1 P.M. was back in the vicinity of the cage doing the usual things.
I was absent much of the afternoon, but R was seen a few times doing the usual things, though not ~~b~~nest-building.

May 20th.

Rhody about as usual. I was away several hours during the day. About 5:15, R who had been spending a lot of time in the inner cage, was given a mouse in the presence of a visitor (K.H.D.). The mouse was taken to the roost tree, arriving at about 6 P.M.

Thrashers at Mr. Sampson's

I have been visiting the young thrashers once each day and giving them one feeding of soft food. The larger bird has taken it freely, but the smaller has more often than not refused. He is more timid.
The parents have scolded when I have been at the nest, but sometimes have withdrawn and kept quiet.

About 11 A.M. today I found the nest, much to my surprise, empty; I had not thought the chicks old enough to leave. (Curiously also, unlike other nests of thrashers, the fairy chorus had not been heard from this brood). While I do not know their age, the birds seemed too immature to leave.
After fifteen or twenty minutes the parents appeared and seemed little disturbed by presence in the vicinity of the nest. In fact, as long as I did not compel them to come out of the bushes to get them, they took worms tossed to them. Naturally I watched to see what they did with them. They carried them about as if hunting for their brood, then finally ate them. From this I assumed, erroneously as it developed, that the youngsters were no more and left that part of the garden. A last look at about 11:30 showed one of the youngsters running across some stone steps leading up to the upper garden, followed by a parent carrying some of the worms

that I had tossed and they had not previously retrieved.

After a chase I managed to catch this youngster, the parents being apparently unconcerned until I caught it, when, as the bird yelled vociferously, they became much excited and seemed about to attack me, scolding loudly. They were joined by towhees, wren-tits and other birds. None of them followed me as I carriedthe young bird away. When I got it home it was still angry and frightened. I squirted moistened soft-food down its gullet while it was yelling and instantly thereafter we were friends, taking food readily when hungry, recognizing me as the source of food, showing no fear reactions--an astonishingly quick reversal of attitude toward me. From its initial behavior I thought this was the "bad" one, but, in the sequel, it was identified as the big, "good" one.

About 3 P.M. I went back to see if I could get the other one, although I had little hope of success. The thick shrubbery and steep slopes making it not only difficult to find birds, but still harder to catch them with the hands. Everything was quiet for abou a half hour. Finally I heard one of the parents. By moving about I learned the area in which they were most sensitive. (Incidentally tossing them worms, some of which they took). By withdrawing until their scolding subsided to an almost negligible amount I hoped that they would "tell" the youngster that the field was clear and he might make his whereabouts known. Whether the reasoning was correct or not, that is the way it worked out. A slight rustle in the ivy below one of the parents, and I had him. The gathering of birds was repeated in response to the chick's and parents' outcries, but I bore him off struggling.

When I got him home with the other it was seen that hhe was the smaller,"bad" one and he had to be forced to take food, though he began to relent slightly as the day wore on, and by 9 P.M., he voluntarily sought food from me.

The big bird: Okii (Oh-kee: Japanese for big) is much stronger and can use the perches. The small bird: Chiisai (Cheese-eye: Japanese for little) can not get up on a perch 3 inches from the floor of the cage.

May 21st.

At 5:30 A.M. the young thrashers were in the same places where they were when last seen last night, not stirring when the cloth was lifted, so I left them without disturbing them. O was on his perch and C was in the "nest".

At 6:30 both were anxious to be fed. After feeding Chiisai, the"bad"one went to sleep peacefully in my hands. Neither now fears me at all.. They were fed again at 7 and at 8:20 and 9:20. They remain quiet between feedings.

At 9:30 I discovered Rhody lying down in nest 8-37. He began to cry when I spoke to him, then fussed with the inside of the nest, then came down for more twigs, and wanted no food.

About an hour later he was watching the magpies, but came out on invitation. He refused a large mouse, but took a much smaller one when they were exchanged. Carried to the mirror. Not watched beyond that point.

1:30 P.M. O and C have been fed at intervals of an hour to an hour and a half. They can be handled freely without their trying to escape; in fact they do not wish to leave the hand and have to be "scraped" off. The "fairy chorus" has appeared. It is a comfortable little twittering, almost inaudible, and is not a

call for food. Strange it could not be heard in the nest. At their last feeding they were given cut-up meal-worms.
C is now able to get up on the lowest perch.

During the rest of the day they were fed at regular intervals, in small quantities; preened often and dozed much. Both of them like to lie quietly in the hand and will stay as long as permitted, showing no tendency to leave, dozing and occasionally making comfortable little sounds, especially after being fed. They rarely call for food.

Rhody was over at the Nichols' about 5 P.M. and would not respond to call; but when I turned and walked away, apparently thought better of it, ran to the fence flew over, and followed to the toolhouse. This mouse, with ceremony, was taken to nest 8-37 and eaten there promptly. He then took a long rest and,at 6:15, was seen by Julio heading for the cage--away from his roosting place.

May 22nd.

The young thrashers were fed at 7 A.M. They seem in first class condition and are void of fear.

Rhody was in his nest 8-37 at 9 A.M., crying on being spoken to, but not coming down. A little later he was carrying up twigs. He remained at this occupation until after 10:30 and at 11 was on the observatory roof.
At 12:10 I had the young thrashers beside me in the upper garden in their cage, giving them access to the direct rays of the sun instead of light transmitted through glass and thus deprived of most of its ultraviolet wave lengths. Chiisai suddenly squalled, calling my attention to Rhody 5 feet away intent upon the cage and its occupants. Each time Rhody moved nearer C squalled, but Okii was indifferent. R now came so close to the cage that he could have touched it with his bill, so I held a hand between him and the thrashers. He was intensely interested, but did not offer to peck them. His attention was drawn from the birds by a mouse, but, after a good drink, he went up to the roof. In 15 minutes or so he was back again. Previous action was repeated in all details except that a smaller mouse was substitited. Even the drink was repeated and the ascent to the roof.
Chiisai now squalled at any large object in motion nearby, but would lie quietly in my hand, squalling however, if anything approached or of I moved one hand too quickly. (A new phase in his behavior). Both youngsters performed thrasher standard "sun-fits" and Okii developed a sweet little warbling song of short duration, but repeated several times. (Similar precocity was noted with some of Brownie's chicks).

I was absent from about 2 P.M. to 4:30. Julio said Rhody had again been "snooping" around in the upper garden in the patio and also"wanted to get into the dining room". He was given a mouse.
At 5 P.M. I looked for Rhody, could not find him, but as I was standing in the upper garden wondering where next to look, a fluff, fluff, fluff over my head, and Rhody landed in front of me, having sailed down from a tree behind me and just cleared my hat. He wanted food at once, so I tossed him a few worms and then went to the tool house over a route along which R has never followed me. I could not see him coming, but in a few seconds he was waiting for his mouse. He refused a large one but accepted a tiny one with full ceremony and carried it off along the north road, presumably either to nest 8-37 or else to the roost tree. As a route

to either of these places this road is gaining favor with him, despite the fact that, to the latter it is much longer and more indirect.

Food of the young thrashers. On the advice of Mr. Brock I have added to the menu of Okii and Chiisai a custard of egg, milk, butter and a little salt. On my own initiative I have added cod-liver oil (containing vitamins A and D) to both the custard and the soft-food. They also are given a few meal-worms about every third feeding. Also beginning today, as the notes indicate, they will be allowed direct sunshine (with choice of shade) in addition to that that comes through the window glass. All this ought to keep them from becomig rickety!

At their bedtime, for the first time, they were disturbed and inclined to complain about matters. Principally, I think, because O, also for the first time, persistently sought a non-existent high roosting place in the cage and climbed about restlessly setting a bad example for C. While it was obvious that he wanted a higher roost, I made a crude experiment by placing him on my lap. He immediately climbed to my shoulder and seemed contented there. This, however, could not be considered a satisfactory solution of the roosting problem, so he was returned to the cage. He continued to climb and scramble. The cage was then darkened. This did not work: both continued to move about . I did not anticipate this result, as all birds of my acquaintance invariably quiet down when the cage is covered. I removed the cover and darkened the room as much as possible by drawing all the curtains to shut out the daylight. No good. On the thøeory that they were now unable to see any of the perches clearly and that this (plus excitement perhaps) was now their trouble, I turned on all of the lights in the room, still keeping out the daylight. They quickly found perches and thenceforth there was not a sound from them--whatever theory applies. The lights were then turned off, one side of the cage (that toward the room) being left uncovered.

8:30 P.M. I find they have not moved and inch, and have just completely covered the cage.

Revival of thrasher song

For several weeks there has been little thrasher song in this neighborhood until the last few days: Birds busy with broods and Brownie gone. I predicted (to Mrs. Sampson) that after I took their youngsters, their thrashers would begin to sing again very soon. (Nothing anthropomorphic about that! Rather: ananthropomorphic). Early this morning thrashers were singing loudly down at Sampsons'. I went dowm there about 11 and Mr. Sampson said they had been "singing their heads off all morning",-for the first time in weeks.

3 or 4 days ago a thrasher that was singing frequently just west of the west fence earlier in the season and then was not heard often during the following weeks, began to sing again. Today he was at it"all the time" and even came to this garden and sang. He was still at it at 7:25 P.M. (Sunset 7:18). I have thought that he had adopted the west lot as his territory and nested there, but have never investigated. Perhaps he has, and his brood is now off the nest and/or a new nest is in prospect--hence the revival of song. Perhaps, also, he is investigating my place with a view to taking territorial possession. His song differs utterly from B's in phrasing and timbre. Not only is the individual thrasher versatile in song, but individuals differ markedly from each other. Yet they "all" seem to *scrip*, *hrick*, *whip*, or whatever it is, and say *queelick* or *quilck* in about the same way.

May 24th. 25

I was away from 7:30 A.M. to 10 P.M. (Corral Hollow, Lone Tree and Hospital Canyons) tryin, with Donald Brock, to locate road-runner nests, but without success.

Julio tells me that Rhody brought home a small snake, but that on being offered a mouse, abandoned the snake for the mouse.

May 2~~5~~4th.

Rhody was given a mouse by Julio before I was up.

The young thrashers are making interesting progress. Each was offered a worm in the palm of the hand and reached down for it with wide-open bills, as if expecting that the worm would accommodatingly perform the rest of the operation in the manner to which they have been accustomed. Later Okii, when a worm was put on the floor of the cage in front of him, managed after a long series of trials, to pick it up several times, but could not accomplish the "double shuffle" necessary to get it down his throat.

Both birds peck at objects now in a purposeful manner instead of randomly as at first. Thus they try to pick them up. When sand was put in the cage both dug in it with their bills, but not with the typical thrasher sidewise swing. They also swallowed particles of sand.

Okii has learned to drink water out of the drinking vessel. His first effort was to try to bite pieces off of it and again holding his bill wide open as if expecting the water to climb down his throat. Finally, about noon, he had developed standard technique. Curiously, as noted with some of B's broods, the first drinking effort was accompañied by crouching and bathing movements of the wings.

Chiisai made tentative efforts to drink, but was not so far advanced. However he distinquished himself by essaying song while Dr. Reynolds stroked his back.

The cage is on a stand of a height such that, when I sit in a chair in front of it, my knee is about at the level of the bottom of the door. When the door is left open they frequently come out, jump to my knee, then begin to explore my topography instead of dashing about the room trying to escape. They examine my glasses, peck at the dots on my necktie, and if looking for a place to lie down, climb to a shoulder and cuddle against my neck. When they have had enough of this, up to the present at least, they retrace their course and reenter the cage of their own volition.

At 5:30 Rhody, whom I have been neglecting the last day or two, was found on his shelf at the magpie cage. He followed promptly to the tool house and, on arrival there, rattle-booed at me instead of whining as usual. (In protest at my neglect, or in greeting? This was the first time he had seen me in two days).

I remembered that Julio had captured a live alligator lizard and put it in the shop, so decided to offer R that instead of a mouse. He now followed to the shop. I put the lizard--a rather large one inches long--on the ground. He was not sure that he wanted to tackle it, but finally grabbed it by the back of the neck, dropped it hastily and did some fancy foot work in avoiding it. The lizard was belligerent; raised himself as high as he could on his legs and confronted Rhody with wide open mouth, standing his ground bravely. Rhody did not like that; decided not to renew contact with the enemy, walked around him and stood in front of me, crying expectantly. This meant mouse preferred; so

I offered the lizard an honorable retreat into a can held in front of him and he promptly scuttled into it. R now followed to the tool-house, got his mouse, displayed and marched off.

I returned to the thrashers in the bay window of the living room. From there I could watch R's nest 8-37 at the same time. At 5:50 he appeared in the nest with his mouse and did not leave until 6:35 P.M. (A late hour for him to be in this nest).

While giving R the mouse I found the snake that he had killed and abandoned for a mouse yesterday. Though a small one, it has a big bulge somewhat aft of amidships and probably has some large creature inside. This suggests that Rhody may have decided against an attempt to eat it on account of its abnormal bulk. On the other hand, however, maybe he is temporarily "off of" his distant reptilian relatives. It will be noted that his abandonment of the snake was apparently permanent. He decidedly prefers food of his own discovery to be alive and kicking.

May 25th.

At 9:30 A.M. Rhody was in his nest 8-37.

At 11 he was sunning near the cage and followed quickly for a mouse. He was given a huge one, since he appeared very hungry, which was killed and downed without benefit if ritual of any kind.

Chiisai helps himself to first worm,

A few minutes earlier Chiisai, without guidance of any kind, picked up and ate in perfect form, a meal worm from the floor of the cage, thus accomplishing this feat before his more advanced nest mate was able to do so (at least before a witness).

Okii, howver, leads in foraging about the cage for food and is now nearly able to take care of his needs without help. He also has developed an immature digging song, and is indefatigable in prying into obscure cracks and corners.

About 11:30 both began to call: yip, yip although they were not hungry. It proved that what they wanted was a nap.

Okii, since he has discovered how to drink water, now practices that accomplishment frequently. Chiisai can also drink, but not in such a professional manner. I am not sure that his efforts are not intended as preliminaries to a bath.

About noon Chiisai rivalled Okii in throwing soft-food out of the dish and picking up an occasional crumb of it. He also developed a song equal to O's. For a time both sat side by side on a perch and sang in concert, but each for himself.

At 11:30 Rhody was back at the cage.
12 Ditto . 1 P.M. ditto. 2 P.M., ditto; 2:40, ditto

This appears to be a great day for him to preen. Maybe the big mouse is what is keeping him home.

3 P.M. He now alternations of spread-eagle sun-fitting with retreats to the shade to cool off and preen.

4 P.M. Still at it.
5 P.M. In west lot.

6
May 25th

Rhody creates disturbance in here and spoils this page

9:15 A.M. At 9 A.M. I was out in the shop cutting a fresh piece of paper for the bottom of the thrasher cage. The cage was on this table a few inches from this typewriter. I heard loud scolding of a thrasher in anger and rushed here thinking something was wrong with Okii, who had, earlier in the day,

seemed out of sorts and had made this sound. As I entered the door, Rhody jumped down from the table, scattering various dishes and feeding appliances over the floor. Chilsai was the one doing the yelling. Okii was perfectly calm. Neither bird was fluttering about. This is the way it was on their first introduction to Rhody.

Rhody now found himself cornered, but kept his head though nervous. He wanted to see more of the young birds and jumped up on to the typ~~r~~ewriter messing up the preceding page, as will be seen. The hole after the word preliminaries just below the middle of the page was punched by one of his claws. I shooed him down. He then rose to the ceiling with astonishing ease and grace, floating down almost soundlessly. The cheeky fellow did not want to go out, but I opened so many doors that it was easier to go out than stay in. He left deliberately, and when I headed for the tool house, trotted along behind for his mouse.

At 9:45 I placed the worm box in front of Chilsai on the floor of the cage. Soon he began to pick out and eat worms and pupae . He still thinks that, if he opens his bill wide enough and holds it over them, they ought to do the rest.

Okii was less advanced in this art and only ate one.

About 11 A.M., both birds having been singing in the meantime, and Okii having been making bathing motions at the water dish, I p put a bath tub in the cage. Chilsai was the first to go in, stepping in boldly and sending the water flying all over. Considerably later Okii also bathed. C preened thoroughly in the process of drying, but O hardly at all.

At 1:30 the bird cage was removed to the living room and I returned to this room at once. Rhody was under the table and greeted me with a hruh, hrooo-o-o. He took his time, after perching on the back of a chair, about going out, and then followed me to the shop-yard.

I produced the alligator lizard. R took one look and flew to the top of the wall. (The tin containing the lizard was bright and flashed the sun into R's eyes, so the cause of his retreat is indeterminate.). When I went to the tool-house, he followed and waited, crying. I offered him three sizes of in order of size, beginning with the largest: a medium sized one. He wanted none of them and still cried for something. I went to the house for meat. He now came out of the cage and waited in front of me, but would not take the meat. He then went to spred-eagle sunfit. I found the meat in the cage gone, but whether R took it or not I do not kno~~o~~w.

He certainly expected some action on my part. What wa s it? Did he expect me to hand him the young thrashers?

At the 2 O'clock feeding both young thrashers took worms from the box held up to them.

A teaspoon full of moistened soft-food was offered them. Okii stiffened, raised his wings and backed off as soon as he saw i it moving toward him; Chilsai snarled. Neither would touch it. They are apt to "snarl" at any strange object; O less so than C.

At 4 P.M. Rhody came to the tool-house for his mouse. I had been taking motion pictures of him in his spread-eagle pose to put on record his neck-scratching act that follows the pose.

At 7:30 P.M. I found him stowed away in his house-nest in the roost tree with only his bill visible from below. I had rather

expected that, in this fine warm weather, he would be in the branches of the tree itself.

Mike says that, at 6:30 A.M., he was carrying nesting material nearby.

The thrasher west of the fence sang a great deal during the day. He is coming into this garden oftener and it looks as if he has an eye on Brownie's old territory. I have not yet been able to fit words to any of his music, so different is it from Brownie's Possibly his song at present, which seems to consist of repeating the same musical phrase over and over again, is merely intended as a brief announcement that he claims the territory. Or perhaps it is merely a contact song addressed to a brooding mate.

May 27th.

At 5:45 the thrasher was singing near the west fence. Call him Poniente: Spanish for West,or,say, Poni for short.

At 7:55 Rhody began carrying twigs to nest 8-37.

Now, 8:20 A.M., Okii and Chiisai are in their cage a foot or two from this machine. O is occasionally practicing his song. I pointed the motion picture camera at them from a distance of about 2 feet. Chiisai immediately squalled loudly. I removed the camera and pointed my finger at him. He opened his mouth. Okii was little disturbed by the camera.

It would appear, then, that when C squalls at the approach of Rhody, it is not necessarily because of fear of R as a killer, but as a large, strange object of unknown potentialities. In other words: Chiisai has no instinctive fear of road-runners as such, and his reaction toward R does not constitute a reproach of that bird.

11 A.M. Since writing the above I have had another opportunity to observe R at the thrasher cage. (Two opportunities, rather, about an hour apart).

I had the fledglings in their cage in the upper garden with the motion picture camera set up and focuses on them, with a home-made remote control arrangement operable from the vicinity of the cage. About 9:45 Rhody came, Chiisai squalled once and then subsided but watchful. O slightly nervous. R came to within a foot of the cage, raised his crest and retired to get a twig and carry it clear up over the roof of his house to nest 8-29.- 37

About 10:45 he came again (as silently as a ghost) and stood quietly 3 feet from the cage. O squalled once, briefly. R approached the cage slowly (eventually to within 2 feet, the youngsters keeping absolutely still (I think--but the film may show otherwise). R was more interested in the possibility of food from me than in the thrashers--as the film will show--I trust. Shortly he saw a rat at a bird-bath under a rhododendron 30 feet away and trotted over to investigate, following the rat a short way--slowly-- as it retired into the shrubbery. R now came back to the cage, offering no harm to the inmates, but looking in the ground-cover for worms he might have overlooked.

When he got tired of this and left, he followed to the tool-house for his reward. Now followed an incident out of the usual run of these affairs. The medium sized mouse I offered him was taken with some indifference after waiting and crying in order to see if I would not produce a smaller one. However, he took it, killed, but abandoned it, and started toward the magpie cage. I thought the show was over and left via the shop-yard and shop; but, as I was about to pass out of the shop into the patio, I heard a hruh, hroo behind me, and Rhody was standing in the door to the

yard watching me . I retraced my steps, half lead and half followed by the bird, to the tool-house and got him a smaller mouse. This was accepted at once and carried off with full ceremon~~y~~y. There had been none with the abandoned mouse.

Now, beginning with 10:45: How is Rhody's behavior to be interpreted--in plain language?

First: He has remembered, based on extremely limited experience, that young birds in a cage are likely to be found in a certain limited area in or near this room.

Second: He is attracted by these birds.

Third~~s~~: In yielding to this attraction, he discovers that a well known provider of food is present.

Fourth: He is confronted by two centers of attraction: the birds and myself.

Fifth: He moves toward the group, showing no excitement: That is, he moves slowly, without stealth, does not raise his crest and merely glances at the cage. When one of its occupants squalls, he pauses and looks at it for a moment, then examines the ground-cover for food. Worms are tossed into the cover and he loses all interest in the birds. They are, on this occasion, a less powerful attraction than food known to be available.

Sixth: He sees a rat and goes to investigate, making no attack, and showing no excitement. Curiosity as to this new factor overcomes the two previous attractions--for the time being.

Seventh: He returns at once tothe first group after satisfying as to the rat. His interest now appears to be primarily in food, though a sudden movement in the cage causes him to take a step or two nearer and observe its occupants.

Eighth: He loses interest and departs (or perhaps wishes to divert my attention to the mouse question).

Ninth; He knows I am a mouse provider and follows me.

Tenth: He is disappointed at my offering. Based on previous experience, he decides to wait for a more desirable substitution.

Eleventh: None forthcoming, he reluctantly accepts the first but decides it will not do and abandons it. He will neither eat it nor carry it about as an offering.

Twelfth: He loses hope in receiving a more suitable mouse and turns away.

Thirteenth: He sees me about to disappear, hope revives and/or he decides to remind me of his needs, remembering that I do not usually refuse to "come across" in the end.

Fourteenth: He follows me (unknown to me). I do not stop, so as I am about to disappear he calls me ,and when I go back to him, partly leads, partly follows to the mousery, finds the small mouse offered is what he wants, takes it and, this time, treats it with full ceremony and carries it off.

The young thrashers seem in perfect condition, can get their own food (soft food and meal-worms) from the dishes, but like to be fed occasionally with the "squirt gun" nevertheless. They are now a little more difficult to feed with this implement, frequently shaking out part of the food if it is not put far enough down their gullets. I get the impression that their gullets have contracted.

May 28th.

The young thrashers were put in the large aviary for an hour or so and enjoyed their roomier quarters, developing the thrasher sidewise digging technique almost at once. They did not forget their small cage and occasionally ran back into it, finallydeciding to stay there.

Rhody was not seen until about 6 P.M., when he came for a mouse and took it with ritual to nest 8-37. I was somewhat anxious about him, as I had just heard of a roadrunner being treed by a cat about 500 yards N.W. of here, and attempts being made to catch it.

Miss Dougan came to get photos of O and C while they were in the aviary. They were very tractable and readily assumed natural poses on branches where they were placed.

May 29th.

A thrasher was heard singing brilliantly close to the house at about 5:30 A.M., probably Poni. He kept it up for about half an hour.

About 9 A.M. Rhody was discovered in strenuous sham battle with the magpies, not "pulling his punches" as much as usual and often striking the wire. One of the magpies sat close to the wire and occasionally prodded at R, but not apparently angrily.

When Rhody got tired of this game he came out and spread-eagled. When I left for the tool-house he came too and did not think the big mouse I gave him was too large, for he killed it unceremoniously and gobbled it without any foolishness, but for a time he looked like a man whose collar is to high and stiff for comfort.

O and C were again transferred to the aviary for as long a period as they seemed to enjoy it. When they at last retired to their small cage and seemed content to stay there they were returned to the house.

Once Chiisai, hearing perhaps for the first time, a brown towhee's alarm call, responded at once and scuttled into the bushes. O, in the small cage at the time, was not seen to react, but I may not have looked in time. As a general rule C is more responsive to outside events than O.

I have found that a smaller tube: one that will now pass the "critical" point in their throats, has done away with the young thrashers' difficulty in receiving administered food.

About 3 P.M., as I went down the driveway, Rhody was over at the Nichols' new garden sunning and preening. When I returned about 4:30 and sat down near the cage there was shortly a rustle of leaves and R came up over the top of the cage, entered it, had a look into the empty meat dish and came out. I went to the kitchen to get him some meat and he followed, but merely stared at the meat and cried without budging; so I headed a procession to the tool-house and selected purposely a mouse as large as the one

he ate this morning. He hesitated then tapped it on the back of the neck, drew back and waited, crying. Then I got a much smaller one. He seized it eagerly, hrooed, bowed and tail-wagged. Julio now appeared with a live blue-bellied lizard and offered it. R was interested at once, but held on to his mouse, carrying it eventually to nest 8-37 with frequent stops on the way to perform his ritual.

With R still in the nest, it seemed a good time to examine the west lot (and the adjoining ones ab~~b~~utting on this place) for a possible nest of Poni's. This proved a hot, tough job in the dense growth of baccharis, plum, etc. on the steep hillside. As a bit of irony of fate: just as I was in the thickest of it, Poni began to sing loudly somewhere back at my place. When I emerged from the chaparral he came down and sat on the fence 15 or 20 yards away with perfect composure, making no alarm sounds. Perhaps there was no occasion for alarm. I had found nothing. (Except 3

I now examined the more open portion of the slope (old nests) where most of the oaks grow, finding a towhee in a nest and, somewhat to my surprise, Rhody in his house, still with the same little white mouse whose career as a separate entity I had supposed ended in nest 8-37. R peered down at me with a friendly hroo and I finished my search without discovering any of Poni's handiwork. (5:40 P.M.). He was still singing happily not far away.

May 30th. (Sunrise: 4:50 A.M.).

Early song by Poni.

Before fully awakening this morning I was semi-conscious of sounds coming in through the open window. The pattern cleared itself and I realized that a thrasher was singing perhaps 30 to 40 yards away. I looked at my watch: 4:40 A.M. The song continued for 10 or 15 minutes then ceased entirely. Probably Poni; but it was different from other songs I have heard from him, having an odd, lively rhythm marked by strong accents on certain syllables. I could recognize no "words" of Brownie's or any other bird's. (The sound of this machine has started Chiisai, 18 inches away, singing. 9 A.M.).

O and C delight to throw the soft-food out of their dish, picking up perhaps one particle in a thousand. This is in strong contrast to the economical house-keeping instincts of Brownie (as commented upon in these notes). Brownie, when taking soft food either from the hand or from a dish, would scrupulously pick up all the crumbs dropped while feeding, even when there was plenty of food left at the source of supply. The crumbs gathered, he would again resume feeding from the hand or dish. Perhaps experience had taught him to be thrifty.

In the afternoon O and C were put in the outer cage and movies taken of them. After they became tired of exploring they proved tractable subjects.

At 4 P.M. Rhody came to the cage. C squalled once and thereafter, for about 10 minutes, sat still making a clucking sound: one "cluck"--although that does not describe it, evry 5 to 10 seconds. It was noted that both young thrashers moved toward Rhody instead of away from him. R was mildly interested, came close to watch; made no offensive movements. He probably was really waiting for me to come out of the cage and get him a mouse, for when I did leave, he followed to the tool-house promptly, showing no desire to take a large mouse, but accepting the smaller one substituted with full ritual followed by a march to various reflecting surfaces, and, when last seen, was in nest 8-37 with it.

May 31st.

No early song was heard by Poni--perhaps because I was not awake early enough. Later in the forenoon he (?) was calling from Brownie's old post on the old oak.

At 10 A.M. I carried O and C to the aviary. Rhody was already in the outer compartment intent upon the magpies. As I approached him, Chiisai in the cage being carried, began to "cluck" when we were about 15 feet from R, but soon stopped. I took them to the inner compartment almost brushing Rhody with my shoulder in passing him, but he continued to watch the magpies. In about 15 minutes he came to look at the thrashers without making any threats, then back to the magpies.

He followed me to the tool-house and accepted a large mouse without being at all finicky about it, eating it as soon as it was properly prepared--without ritual.

At 11:15 (I inside the inner cage with the thrashers) R entered the outer compartment and came to the inner door, wanting to join us. He was very mild about it. After a go with the magpies he went out and began to gather pine needles. These he brought to the mirror near which I was sitting and tapped on the glass--looked at himself a long time, dropped the needles a few at a time, stared up into the upper annex of the cage at Okii, then moved off to lie in the shade.

He loafed about here up to about 4 P.M. After that I did not see him.

R's reaction to a ground squirrel

About 3:30 a ground squirrel poked its head up over a bank on top of which Rhody was sitting "listening to the birds", about 30 feet away. R saw him at once and rattle-booed at him, then, as the squirrel retreated down the slope into the bushes, R advanced carefully and peered over the rim where the squirrel had disappeared, making that odd wing gesture (like a shrug) which he uses with lizards. Seeing nothing of interest, he climbed a few feet up a pine tree and began to preen.

The birds that now began to complain of his presence were:

Both kinds of towhees,
Nuttall sparrows,
Linnets,
Purple finches,
Green-backed goldfinches.

He paid no attention to any of them.

Chiisai recognizes scolding of wrentits as danger signal.

At one time when the wrentits were scolding Rhody about 50 feet from the cage, Chiisai, who could see none of the actors, promptly tried to conceal himself under the water dish in the small cage.

O and C were allowed to remain in the large cage until about 5:30 P.M. and were then taken indoors. Neither had had any great difficulty in getting up into the highest part. Okii is much the better flier. Both can fly almost vertically upward for a few feet. Both were apparently tired after an eventful day and, when brought indoors, immediately began to doze with closed eyes and open mouths like tired children.

Young thrashers and Argentine ants.

The Argentine ants got into their cage when it was untenanted on the aviary floor. When they were returned to it, O and C immediately began to pick them up and eat them.

June 1st.

8:55 A.M. Rhody is on the chimney top of the fireplace in this room. I can hear his hroos coming down the chimney.as he bows in various directions with the mouse just given him.

8-37 is a twin nest.

At 7:55 he was in his nest 8-37. He cried when I spoke to him and began to work. This nest is now a twin affair. I rather think now that this duplicity is not so much the result of the original's being crowded as it is an expression of Rhody's urge to keep on building.(9:03 His coo-song is now coming out of the fireplace! This is an event, since it is the first time in many weeks that he has been heard to sing, and I had about reached the conclusion that the last of it had been heard for the season. He is singing with great ardor and often).

Rhody renews song!

Speculation as to reason for the twin nest.

To resume where I left off: He apparently seems to have considered that enough time has been spent on 8-37 and that another nest was in order, and that this place is as good as any!

When I went into the cage at 8:45 Rhody appeared from the shrubbery and followed me inside. I picked a freshly killed house mouse out of the food dish and offered it to him, twirling it about to make it look animated, but this did not fool him. He was polite about it, but would have none of it. When I left for the tool-house he promptly followed, and the resulting mouse is, at this moment, (9:18) now in Rhody's bill entirely surrounded by song at close range. Okii, in the small cage with Chiisai, a couple of yards away, is adding his immature song to that of the road-runner "in the fireplace".

Rhody continued his song for a half hour, then came down with it. He took it to the cage; to the Nichols' new garden; back to the cage; to the observatory and, finally, to nest 8-37, where he ate it at 10:15. Shortly after he began carrying up new twigs.

11:00 A.M. As I was writing the above note, the young thrashers, in their cage by this machine, began to make what I have called a succession of clucks (although that does not describe it properly: it has rolled r's in it). They had spotted Rhody coming to drink at the pool 20 feet away in the garden. This "cluck" appears to be in the course of change, and is approximating the adult "scrip" (Also an incorrect rendition of the sound). No doubt it is the forerunner of the scrip.

After finishing his drink Rhody came to the door and looked in at the youngsters mildly, turned picked up a twig and carried it up to nest 8-37; by the devious route taken, perhaps 80 yards away. I wonder why all this renewed interest in nests and song.

I was away from 12:30 to 5:45, Julio says Rhody was here part of the time.

June 2nd. (Note written on 3rd.).

Rhody was not seen here during daylight hours, but I was away part of the time. (This typewriting has started the young thrashers singing--9 A.M.;3rd)At 7:40 I went down to see if Rhody were in his roost tree and found him comfortably tucked into his house. He now likes this edifice in all kinds of weather. (This refers to 7 P.M. on the second).

June 3rd.

At 8:45 Rhody was in his nest 8-37.

At 9:30 A.M. he strolled by the cage while I was inside with the young thrashers, in a casual sort of way, and went over to the Nichols'. I was away several hours during the day, but while here, did not see him uhtil about 5:50 P.M. He was then standing quite still with something in his bill on the north side of the house. When I walked up to him, he began to wag his tail and bow. It was seen that he had a small piece of dried-up meat. He was invited to come to the tool-house for a mouse, but would not leave his post; consequently I went and got a mouse for him. He now approached me, still carrying the meat: bowing and wagging. The mouse was placed on the ground at my feet. R approached within~~g~~ "grabbing distance" and continued his ritual; but when the mouse bolted, he hastily dropped the meat and caught the mouse. In about 10 minutes he climbed to nest 8-37 after a march interrupted by halts for appropriate ceremony.

The young thrashers spent most of the day at "liberty" in the 12' x 12' outer cage. Much of their time was spent in digging and picking up small objects of one kind or another--not always food. They are the only creatures I have seen at this place that consistently eat the Argentine ants.

While they were digging I enabled them to make many "discoveries" independently of meal worms and pupae at the bottoms of their excavations. They eat them more readily in this way.

They were also given doses of moistened soft-food occasionally, as they do not seem able to find enough food for themselves as yet, although they make occasional applications to the dry soft-food dish.

For several days they have been in that transition stage between total dependence upon others for their food and comlete self reliance. A similar condition was noted with Archie and Terry and with Brownie's various broods. In this stage young birds frequently back away from their parents or from human beings with open bills as if wanting the offered food, but averse to taking it. When it is placed in their mouths they will often throw it out impatiently. This is a difficult period in their rearing.

May 4th.

Rhody was working on nest 8-37 at 9:15. Exactly an hour later, when I returned in my car, he was still at it. When I passed on foot he cried and rattled his beak and soon was trotting along behind me on the way to the tool house:eager for a mouse. This he carried off with ritual, and its final disposition was not observed.

At 1:45 he appeared at the oval lawn to sit on the bench and listen to the birds that gathered to comment upon him. This time his usual retinue was increased by two Russet-backed thrushes that have a nest in an azalea by the front steps. (This nest, the first one of its kind found at this place, is robbed every time an egg is laid in it. At present a rat is suspected. Rhody, based on the experiment made with him, Archie and Terry with a jay's nest, is believed not to be an egg-eater).

After listening to his detractors Rhody lead the way toward the tool-house for half the distance. When he stopped for a drink I passed him. He then followed. He was indifferent about mice, although when the one placed before him started to run, he grabbed it, killed it and abandoned it.

Next he went to the cage to watch the young thrashers. They flew to a high perch and scripped. (This "scrip" appears to be

about fully developed now). R went off a few feet to sun and preen; the scripping ceased. In a few minutes he was back again. Chiisai was the only scripper this time, and then only moderately. R retired again. Same result as before. R now pulled at a rope connected with the awnings. C scripped again. I then took him on my hand and carried him to a point where he could have a good look at R. He was perfectly calm about it. (3:20 P.M.).

O is still larger than C.

Both fly well and are good diggers.

Both have the "mane" which was noted in connection with only one other young thrasher in these notes. It should have been recorded before, as it has been present from the first.

Chiisai, the "bad" bird in the nest and the more backward one at first, is the gentler bird; stands handling better ; handles worms more skilfully; accepts food more readily; pays more attention to outside happenings.

Either one, when he finds a worm, picks up a pebble or a twig may carry it to the other, making the same adult clucking sound that Brownie did when offering food to a chick. The other will open his bill, but the object does not change ownership.

They are both beginning to respond to my approaching the cage by yips and by sometimes running toward me.

Rhody (now in nest 8-37: 5:30 P.M.) was not far from the cage most of the afternoon. At 3:50 he again followed to the tool-house looked at my offerings and turned away, although he cried.

Twice when he approached the cage Okii flew to my shoulder. Twice I held Okii close to my ear to listen to his scrips. They are just like Brownie's --whatever they were. O could not have been much afraid of R, for he would momentarily stop his scripping and pull at the bow of my glasses.

Rhody finally came to the wire and lay down. O made himself very tall and approached him stiff-leggedly. R made no hostile moves. When he began to whine I went to the tool-house followed by him and presented him with the mouse he had killed and abandoned. He was perfectly satisfied, displayed, took it to the mirror, lay down with it near the cage and carried it to nest 8-37 about 5 P.M.

Rhody left nest 8-37 at 6:20 P.M. and soon headed for the roost tree.

May 5th. to 8th., incl. (Written June 9th.).

During this period observations continued, but specific notes were not made.

Rhody spent most of the daylight hours here, got his mouse rations, worked on nest 8-37, loafed in it, watched the young thrashers, and in general, ran true to form. He did not sing again, but occasionally rattle-booed for my benefit when my pace toward the tool-house was too fast or too slow or too or not enough something or other.

The young thrashers dug industriously in the large cage but still do not find enough food as a result of their own efforts and still like to get a "shot" from me at intervals of an hour or so. Leaf-mould from the garden is carried in to the cage and from this they get pill- and sow-bugs, centipedes and other crawling things. Meal worms and the resulting pupae and beetles are also set at lib-

erty for them to ferret out and devour, and angle-worms are put in the mould. Brownie's attitude toward these latter worms has been covered in these notes: sometimes he ate them--sometimes not. At present the youngsters are eating them freely.

The russet-backed thrush finally abandoned the nest in the azalea--too frequently robbed--I suppose, and is now building one about four feet from a window of the tool-house, in a place where rhododendron and fuchsia branches come together. By screening the window and making a small opening in the screen I have been able to watch and photograph nest-building operations.

At 6 A.M. on the 6th. a disturbance amongst the birds, with thrushes taking an active part, was heard outside my bed-room near the first thrush nest. Prompt investigation showed a screech-owl as the intruder. I went at once to the bird house where a screech owl is rearing a brood, found one adult home and a freshly killed nestling song-sparrow stowed away in the corner for future use. Later in the day the adult and brood were transferred to another house, taken off into the country several miles and placed in an oak tree.

June 9th.

At 8 A.M. Rhody was working at nest 8-37. He kept at it (with loafing spells in the nest) for about 3½ hours.

Poni (the thrasher to the west) opened up the day with song, keeping it up for about two hours: short snatches of a few seconds in length. I think I can now recognize his song without error.

Rhody was given a large black mouse about 4:30 P.M., which he downed quickly without ceremony. As I drove down the street at 5:20 P.M. he was seen running across it toward his night roost. On my return at 5:45 he was already in his house-nest in the roost tree. This is an unusually early retirement for this season; perhaps accounted for by the large size of the mouse he had just eaten.

June 10th to 12th., incl.

On the 10th., Okii and Chiisai in the small cage in doors (Before being put outside in the morning). Okii on a high perch, Chiisai on the floor picking up meal-worms. Chiisai began to make the clucking sound that Brownie used to cause his youngsters to "open up", carried a worm to a point below Okii, stretched to his full height and offered it to O. O reached down below his own feet and drew the worm gently from C's bill and ate it.

On the 11th., in the outdoor cage, both on the ground, Okii took the part of the parent bird. Chiisai opened his mouth wide at first, but as O did not thrust it down his gullet, reached forward, took it gently and ate it.

During this period both birds twice tried to master Jerusalem crickets unsuccessfully. Their tactics were the same as B's, namely to take hold of a leg and whip the creature about in order to remove the legs, but the youngsters are not yet strong enough. One bird would watch while the other looked on. They would then change about. There was no jealousy. When I killed the second cricket, removed its head and legs, C was able to eat it after beating it to a pulp.

Okii handled a short, wide centipede, 1½ inches long, with perfect technique. C wanted it, but did not interfere.

They are tolerant of each other, but sometimes have mild combats in which Chiisai is the aggressor usually. Okii merely defends himself, holding his ground. C may take up fighting posture for an instant; then it is all over.

It is only in the last three or four days that they have been able to maintain balance on one foot. Now they can do it well.

Rhody likes to watch them and often spends an hour or more at the cage, close to the wire. Rarely he makes a short feint at them. When he first appears they scold a little, but soon calm down. Okii walks stiff-leggedly in his presence as Brownie did. Curiously, they disregard the magpies, even when those birds are only inches away, though on the other side of the wire.

Although they dig and forage incessantly, more especially C, and there is soft-food available at all times: also ant eggs, they still have to be fed regularly with the "squirt gun". If very hungry they sometimes quiver their wings, but not often.

Rhody continued as usual: no singing. However, for the first time in many weeks, he was seen sunning at his old post on the west lot in the early morning. Today (12th.) he followed to the tool-house three times, but only the last time did he accept my offering (5:15 P.M.). Ritual followed.

The thrushes have two eggs now in their new nest--the first time they have been able to save one for more than a day. Perhaps removal of the owls had something to do with it. The eggs are laid about 10 or 11 A.M. The birds have not been seen to visit the nest in the afternoon.

June 13th. and 14th.

The thrush laid its third egg on the 13th. and, for the first time, the nest was occupied in the afternoon also, as if incubation were beginning. Perhaps the eggs laid (and stolen) from the first nest are considered by this bird as still contributing toward her debt to society, and the batch in the present nest will, therefore, be sub-normal in number. On the 14th. the nest was occupied all day.

Rhody, during this period, with one notable exception, ran true to form. The exception occurred when, on the ground below nest 8-37, he was invited to follow to the mousery. On the way he picked up a branchlet and carried it beyond the point where he should have changed course to complete the mouse-eating pattern and took it up to his nest in the glass house in the dormitory tree. I watched him place it and,when he came down, he picked up another one. Naturally I expected him to take it to the same place, but he now ran west around the house (about 100 yards) and put the twig in nest 8-37. Thus, twice, he took a twig from the vicinity of one nest and carried it to another nest, but worked on both nests.(June 14th.).

The young thrashers spend the daylight hours in the large outer cage and are placed in a small cage and taken indoors for the night. For the last three or four mornings it has been noted that there were green droppings on the floor of the cage, and these were traced to Chiisai, the runt of the brood. He has also appeared somewhat "soft", less tolerant of Okii and more restless at bedtime. His food was changed (I.e.: his hand-fed food) to the egg custard,

and the few meal-worms given him from time to time, were decapitated and their hard heads placed where the birds could not get them. They were also cut into small bits. It was observed that the green coloration did not appear in the droppings after about 9 or 9:30 A.M.(According to Mr. Brock green is a sign of "inflamation of the bowels" and the remedy, if any, is to change the food to the custard referred to.

Chiisai has been as active in digging as Okii notwithstanding. When they were brought inside at 5:30 P.M. on the 14th. it was after a long period of very active digging in a pile of leaf-mould which had been placed in their cage and, after being fed, both became sleepy at once, C falling to sleep on my hand and O on the floor of the cage--an unusually early retirement.

Both birds placed their heads "under their wings". Since, some where or other, I have read that birds do not do this, but put their heads under their back feathers or wing coverts, I watched closely. Both place their bills, full length, under their wings. They ruffle up their feathers in the vicinity (wing-coverts and scapulars?) so that one side of the head is nearly covered.

June 15th.

There was less green in the droppings this morning and I though Chiisai was more active.

At 9:20 A.M. Rhody was in nest 8-37, but sailed down when I spoke to him, leading me toward the mousery. Again, however, he picked up a twig en route and carried it to the nest in the glass house (2-37, or old 4-36).

A concidence! As I approached the outer cage the young thrashers rushed to the door by which I entered. I said to them: "Some day, it is absolutely certain, you are going to be stepped on". I have never disregarded this possibility, yet in less than 15 seconds, I had

Narrow escape for Chiisai!

stepped on Chiisai as he ran between my feet, coming up from behind to overtake me! There was no outcry, though I felt his wings against my shoe and he ran off, merely startled; yet when I examined him, he had lost the horny part of one outer claw, and there was fresh blood beginning to appear. It does not seem possible to have done so little damage. The toe, itself, was absolutely untouched. I must have stepped merely upon the tip of the claw. This seems as incredible as it would be for an elephant to step upon a man and remove only one toenail and not injure the toe.

11 A.M. I found Chiisai's toe bleeding considerably. There was blood on various perches and his breast feathers were clotted where he had been tucking his injured foot beneath them. With the assistance of Julio his foot was washed and iodine applied. Though this must have stung, he did not cry or struggle. The bleeding did not stop, so bismuth formic iodide was applied and proved effective. The toe was next taped, but Chiisai removed the bad job I had made of it. In doing this, he showed considerable ability to adapt his methods to conditions as they developed.

First, he merely reached down and pecked at it, but in doing this, his foot would be forced backward and he found himself revolving backward in a circle, pivoting on his sound foot, and accomplishing nothing. His foot kept "getting away from him".

He next tried sitting on a perch and doing the same thing, but he could not retain his hold. Next he sprawled out flat on the ground, injured member stretched out at right angles to one side, wing on the opposite side flattened upon the ground, and in this position he was able to reach along the ground and get hold of the tape.

Okii's slumber song.

While Chiisai was being attended to Okii sat upon a nearby perch and sang. This song, I had thought earlier, resembled Brownie's slumber song. As if to confirm this diagnosis, Okii now put his head under his wing and continued the song.

Rhody now came and stood close to the wire to watch operations. Chiisai, who was sitting dozing on my finger with head under wing and sore foot under breast feathers merely stirred uneasily. Okii said nothing.

When I came out of the cage Rhody tagged along behind for his mouse, conducted it, with full ceremony, to nest 8-37, where, before eating it, he several times essayed a rudimentary sort of full song, but of only three notes.

2:55 P.M. R still (or again) in his nest. I think he has been there ever since about 11:45.

June 16th. to 21st., incl. (Notes written 21st.).

During this period Rhody was about the place much of the time. Nest 8-37 was occupied by him a great deal and he was seen carrying pine needles up to it yesterday at 6 P.M. He sits in it mostly doing no work.

Once again he was heard to utter a rudimentary coo-song when carrying a mouse.

Most of the mice given him during this period were eaten at once: There was less display than there has been. Based on last year's observations, this would indicate decline of breeding urge. Still he is much concerned with nest 8-37.

He loafed much in the vicinity of the cage where the young thrashers are. He can no longer get into it to study the magpies, as the door is closed. As I am often in the cage, the possibility of getting a mouse from me is undoubtedly one of the attractions. He will wait patiently close to the wire and, when I come out, will usually trot along behind to the tool-house. Once again, today for his second mouse, he lead the way.

He still is afraid of numbers and smalll boys and girls. This morning Mr, Cain came with half a dozen boy scouts. Rhody was sitting over my head in a low branch of a pine at the north fence where I was repairing some damage. As soon as he heard the boys (he could not see them) he flew down and ran off to the north, not reappearing until they had left.

Incidentally the young thrashers concealed themselves in the upper part of the inner cage with loud scrippings on this same occasion, Yet when I went in and touched one of them on the breast, he stepped to my hand and allowed me to carry him all about the cage and to the wire where the boys were standing and there exhibit him "sun-fitting", taking food and digging in a trowelful of earth all while sitting on my hand. He was perfectly composed. The odd part of this is that neither bird, now that they are getting older, likes to be handled, even when there are no visitors present. This was Chiisai. Okii, on seeing how things were going and that C had not been massacred, flew out voluntarily and thereafter neither minded the boys at all.

The young thrashers have now been in the large outdoor cage night and day since the sixteenth. On the 18th. Okii was out of sorts and inclined to be "puffy", whereas Chiisai, perhaps due to custard's having been made the major portion of his diet, was much livelier. Okii was given the same treatment and both birds appear

to be on the mend. Anyway they are extremely active and are tremendous diggers and their droppings are normal. (Not green). Fresh leaf-mould and loam are put in the cage once or twice a day. They go over it in minute detail.

Okii has developed a "digging song", like Brownie's in miniature, although he sings his "regular" song less than formerly. Chiisai scarcely sings at all now, for some reason or other. His irritability toward Okii seems to hve disappeared.

He is much more restless than Okii, especially at bedtime.

Like Terry, when disturbed about finding a sleeping place, human contact seems to calm him.

He demands much more attention than Okii, calls for food more than O and more than he did at first.

Curious how indifferent both are to meal-worms; yet these creatures were the most potent, civilizing factor in my contacts with other thrashers at this place. I have regarded them as the Big Medicine for thrashers. But O and C, while they will eat them, more often than not reject them entirely when one is uncovered in digging and go on looking for something else.

Young thrashers and gopher snake.

On the way to the cage this afternoon I picked up a gopher-snake over (?) 3 feet long. As I approached the cage O and C (unexpectedly) rushed to the wire with spread wings and tail, clucking as Brownie did when he saw a snake, and tried to get at it. It is almost certain that they never saw a snake before; yet it seems to have been recognized as an enemy and not feared. (Or perhaps I should say: not avoided).

June 22nd. to 26th., incl. (Notes written 26th.).

During this period affairs progressed normally.

O, C and snake.

The snake was introduced into the cage with the young thrashers and held in control. Both young birds immediately manifested great interest, clucking and stalking around the snake stiff-leggedly but not approaching nearer than about 2 feet. They did not offer to attack it.

Rhody and snake.

Rhody was given an opportunity to react toward the snake, which, on this occasion, needed no restraint as it remained quietly coiled, though in defensive attitude. Rhody walked around it about as the thrashers did, flirting his wings at it only once. He seemed to consider the affair as not his particularly, but one in which our interests were about on a par as spectators: thus he showed a tendency to stay close to me and look at the creature from my point of vantage. (Possibly he was studying my reactions!).

Thrush brood.

(Parent shades them).

The thrush has succeeded in hatching all (?) the eggs in the nest. The incubation period appears to be 12 days. The last few days have been hot (Upwards of 90 deg.). At such times as a beam of sunlight penetrates through the canopy of the trees and strikes the nestlings one of the parents sits on the edge of the nest and spreads its wings to shade the brood, panting.

Effect of heat on young thrashers.

On these hot days the young thrashers apply to me less often for food and, in fact refuse it often. They remain in the shade for the most part with wings spread and bills open; yet, at times they will come out deliberately into an open, bare spot and take prolonged sun-baths, seeming to be on the verge of expiring. They use the standard side-to-the-sun

posture of the adult thrasher, one wing raised to let the sun strike into an "arm-pit"for a few seconds, then the wing is lowered. I find, also, that they too have a "spread-eagle" pose like Rhody's. In this, unlike Rhody, the preen gland is exposed to the radiation.

Thrasher preen gland.(Vs. R's).

Without having had an opportunity to make a direct comparison, this gland appears to be much larger in proportion to the size of the bird than in the case of the road-runner.

Personalities of O and C.

Okii and Chiisai have distinct personalities, and the differences noted in the beginning still hold, and, in some cases, have become accentuated.

The difference in size still remains. At one time it appeared that Chiisai was catching up on Okii, but the latter seems now to be forging ahead once more.

Chiisai continues to be more dependent upon me for food and is less self-reliant in other respects. For example: At"bedtime" he is much more restless and responds to guidance in seeking a roost more definitely. At this time he goes about from place to place constantly yipping (or kipping), but if I hold a hand near some point that he is considering, he climbs up to it and settles himself comfortably upon it with little gurgles of satisfaction, closes his eyes and prepares to spend the night there (the hand) Okii has not been doing this, but last evening at 7:50 P.M. I went into the cage, placed one hand against the wire of the door about 7 feet above the ground, and Chiisai at once climbed up the wire to it. Okii saw this, climbed up the wire of the magpie cage, shifted horizontally across it and around a corner and joined Chiisai, who had (as usual) ceased yipping.

Both were then transferred to a more permanent abiding place.

The difference in self-reliance is also shown in their daily behavior. O feeds freely from the various dishes--C much less so. O seldom calls for food. C is "always" yipping and tagging me about, and often refusing food when it is offered, even on his own solicitation. He is much harder to rear.

Neither bird cares much for meal- or angle-worms--both seem to be "last resorts".

Their tatses in foods differ. Thus: Okii, differing from all other thrashers of my acquaitance, is very fond of chopped apple.Chiisai almost completely ignores it. On the other hand, he likes hamburger (which Brownie always refused and O seldom will take. In fact, hamburger, thus far, seems to be the only food aside from the centipedes and other things he finds in the earth brought into the cage, that will stop his yipping.

Okii still sings a little-- Chiisai far less often.

Sex of thrashers.

If I were to make a guess now, it probably would be that they differ in sex, Okii being the male. There is no distinction whatever in markings.

Thrasher digging.

Early in these notes it was suggested that the thrasher is the"digger of diggers." These youngsters are "the diggingest" thrashers of my acquaintance. They dig under everything--all the time. If I stand still for a moment they are digging under my feet. If I put a hand down as a support, they dig under it. Food of almost any kind placed on the ground before them- even just one worm--is usually dug about and under .

Okii especially, is always digging at my shoes and ankles.

Rhody was seen to visit his nest 8-37 every day during this period, though not seen working at it. He came for mice as usual and displayed with only a few of them.

June 27th.

Poni, the west thrasher, or perhaps another one, was singing at 5:20 A.M. His earlier promise of succeeding Brownie seems to have faded away. He has been very quiet during the past few days.

At 7:10 A.M. Rhody came to the cage, picked up a twig and carried it to the nest in the glass house. After this he followed for a mouse and treated it with full honors.

R starts nest 9-37 (?).

At 10 A.M., Mr. Sampson present, R reappeared, picked up a branchlet, presented it at the mirror and carried it up to the top of the lath house near the cage and placed it carefully on the roof where a branch of an acacia rests. I went and had a look. It was the first one. He came down for more. At 10:30 he was still at it. Is this 9-37?

11:45. At 11:30 I went out to observe events.

Rhody was just going up and into the glass house carrying nothing. His new nest had a dozen or so large, many-forked branchlets in it and is easily seen.

In a minute or two R came out of the glasshouse, went horizontally across it and into a pine with interlacing branches; up the pine and to a towhee nest. (I knew it was there but had not actually seen it before). I could not see what he did other than to put his bill down into it and investigate. Soon he came down. As there was no bill-wiping, he had doubtless had taken nothing from it. A short rest, and he was back at work on nest 9-37. This is about 20 feet from the cage and about the same distance from the glass-house.

I am inclined to think that it is the weather conditions of the moment that influenced his selection: hot, but a delightfully cool breeze at the site and full shade in the morning, but...

12:10. R still working. He has been at it ever since last recorded observation.

2 P.M. Rhody is still at his new job, for some reason or other, preferring a short, soft, fluffy, gray-green composite weed at the moment. He has been busy since last record, except for an interlude ushered in by the arrival of a new snake. This one appeared in the open by the lath house while R was carrying a twig a few feet away. I caught the snake (gopher) and R came to look at it, his interest appearing purely academic. I let it go (1:20) and it went into the shade under a camellia. There R went to inspect and put on a mild, but pretty display. I went to get the movie camera(Meanwhile having measured the snake exactly--it was 3 feet 6 inches long). On returning I found R back at work. The captive snake was now placed alongside the other one. Nothing much happened. R continued to gather material near them, occasionally pausing to watch them. They are now about 20 feet apart, in the shade.

3:20 P.M. Rhody has knocked off (3:15) work, at least temporarily. A stiffish breeze (one of the buts of third paragraph above) is sweeping over the lath-house roof and it is cooler than this morning (79 in the court;.82 in the inner cage in "double shade"). R's first act during this rest was to sun his back in the open pose. This is a divergence from his established norm, due perhaps to the cool breeze's not having yet had time to reduce the temperature at his sunning post--which is sheltered--to that on top of the windy lath roof. In other words: it is not so cool as he thinks it is. At these temperatures he should be using the spread eagle pose followed by retreat to the shade. I did not wait to see him change, but came in to make this note.

3:45 P.M. I went out again at 3:30. Rhody was in the shade on the cage roof. He soon went back to work again.

Chiisai, for the first time in several days, did not come to the wire as I approached and he was not making that little "complaining," two syllabled chirp with which he has been expressing his discontent (?) almost constantly (when not yipping) for the past week or so. He wanted nothing from me and I observed that the piece of hamburger had been well patronized. I hope it is good for him and proves the solution--or the road to it--of his feeding difficulties. I will try switching to liver, since (according to Mr. Cain) hamburger is too thoroughly bled by the butchers and contains benzoate of soda as a preservative.

Rhody was still working at 4 P.M. I then went in search of centipedes et al, and by the time I returned to the cage he not to be seen.

I got 7 centipedes, one of those small worm-like salamanders and a few things I did not see and placed them in a pail of loam, where they promptly concealed themselves.

When this was dumped in the cage the thrashers began to attack the pile at once. Chiisai got six of the centipedes, Okii but one. C also got the salamander, but its tail came off and O got that. C abandoned the salamander; O took it over, but could make no impression upon it.

The last centipede (Okii saw it first, but Chiisai got it) caused the first real fight between the young birds. Okii had not seemed envious of Chiisai's good fortune until the last centipede and then he merely went over to look at C eating it. C at once attacked him fiercely. Okii stood firm and gave no ground as they exchanged blows face to face with "right good will". Neither would yield an inch. Each centered his attack upon the others beak. They meant business and were really angry, making guttural chirping sounds --if such be possible. To end it I placed my hand, with fingers spread wide, between them. They reached between them to continue the good work and, resenting my frustration~~s~~ of their efforts, pinched me as hard as they could.

I separated them and all was peaceful at once. Okii consoled himself with apple and Chiisai, despite his good meal, foraged for hamburger. I also gave him a shot of soft food.

Rhody now (5 P.M.) was located sunning a dozen feet from the cage, followed to the tool-house for a mouse, but they had been moved to the old place in the shop-yard, so I shifted thence, Rhody waiting patiently at the tool-house door for a few minutes before he realized that I would not reappear there. This mouse was carried off with full ritual.

About 6 P.M. I entered the cage. O and C were still foraging, but when I turned my back to them and held my hand up against the entrance door about 7 feet from the ground, C was up on it in about 10 seconds and O in about 30, both prepared to spend the night.

There is some powerful attraction about this particular location: Terry also was obsessed by it and it was there usually that he transferred to my shoulder. I do not know what it is. It is a windy place, which might have been an attraction today for a short time (until the sea breeze became chilly). It "sees" the sun last, though not in its direct rays. If I hold my hand in the same way any other place the birds ignore it.

At this time temperatures were as follows:
Inner cage 72.
Court 69.
Living room of house 85.

The wind was not really chilly absolutely, but comparatively. This was long before their proper bed-time, but I took them into th the inner cage and left them near their night roosts.

At 7:45 I went out again. C was clinging to the wire near the door and began to yip at once on seeing me. When I got in he was on top of my head in a few seconds, or just as it occupied approximately the favored point in space. (I had on a hat). A few seconds more and O rushed out of the inner cage, climbed the magpie wire for a good take-off and landed beside him. I took them off. They insisted upon camping on my hand as long as I held it higher than my head; but if I held it lower, transferred to my hat-- as long as I was properly located spatially. They deserted me if I went elsewhere. Chiisai, when on my hand but still unsettled, showed that typical thrasher gesture when things are not just right, of reaching down and tapping (one tap at a time) the object upon which it is standing: in this case my hand. It is like the nervous tap a batsman gives the home plate when waiting for the pitcher to deliver the ball.

Soon the sandman came when they had definitely settled upon my hand for the night, and I transferred them to the upper annex of the inner cage: "walked" them there as I used to do with Archie and Terry under similar conditions.

9 P.M. They are still where I left them.

June 2~~7~~9th.

A dull morning, with a strong wind sweeping over the lath-house roof, gave Rhody a further taste of the disadvantages of this location as a nest site. The wind was so strong that, when he followed for a mouse, about 8 A.M., he could not follow a straight course across it because the side pressure on his long tail deflected him. Notwithstanding Nature's demonstration of the unsoundness of his selection he continued to work at intervals throughout the day, but spent most of his time loafing in the neighborhood of the cage (and the nest).

He also solved the difficulty introduced by my having barred him from entry to the cage (thereby interfering with his game with the magpies) by discovering a new place where he can sit within reach of the wire netting on the west end of the cage and insult and inspect them to his heart's content. This place he used frequently throughout the day.

He was given two mice during the day, and twice more he followed to the shop-yard, apparently merely to view my exhibit, for he wanted nothing.

Poni, the west thrasher, again sang in the early morning.

The thrush did hatch all four eggs, but a tiny nestling--just h hatched and believed to be a thrush--was found dead at the oval lawn twenty five yards from the nest--at nightfall.

The young thrashers were full of pep all day. Okii continued to use apple as his basic food and Chiisai hamburger. Neither could be induced to eat liver.

Chiisai is afraid of the yellowjackets that are attracted by

the meat, although he will brave them to get at it. Once however, when one of them buzzed and circled too close to his head, he ran off in panic. Okii has been seen to catch them, but he is extremely careful to beat them to a pulp and usually does not eat them until a matter of many minutes, or even hours, later.

O and C both sang--C little, O more often. O put on a slumber song when he was sleepy at mid-day, which seemed as adult as any of Brownie's.

June 29th.

When I was in the cage at 7:30 A.M. Rhody took up his new magpie observation post, announcing his arrival with a beak-rattle of such high frequency as to sound like the tering of a piece of stout cloth. Soon after he resumed work on nest 9-37.

Poni again sang his early morning song.

The thrush nest was examined and found to contain but two chicks The dead one found yesterday seemed to be uninjured. It was offered, when found, to Rhody. He picked it up but abandoned it. No Argentine ants were seen at the nest. (The dead bird was black with them).

Rhody did not work much at his new nest during the rest of the day, although he found it a pleasant place to lie in. He could be found either there, watching the magpies,or lying by the loquat tree at almost any time . He has not yet dedicated the new nest with living sacrifice.

Reference has been made heretofore to his tendency to dramatize affairs. He is a natural comedian with a strong leaning, unconsciously, toward burlesque. Once today, in trying to take a branch about 7 feet long up to his nest, everything went wrong. In trying to get out of one difficulty he would get into another. His act was as funny as that old one of the paper-hanger formerly seen on the stage.

Every now and then he has to show one of his twigs at the mirror for inspection by the "other bird" before incorporating it into the nest structure.

Okii and Chiisai were bright and lively, although Chiisai (who was the "bad" one in the nest) in some indefinable way, is not the bird that Okii is. I suspect that, from birth, all has not been just right within him. Okii is now perfectly able to take care of himself. Chiisai is not, I think.

Chiisai has now lost the "core" of the claw I stepped on and his foot bothers him, although it looks all right. He stands on one leg whenever resting.

At about 6:15 P.M., when I put my hand up to the wire of the entrance door, Chiisai, again, was upon it in a matter of seconds making pleased little gurgles and clucks. In a half minute more Okii again followed, but silently. Both began to doze: Okii with head under wing, Chiisai on one leg. I could feel the rhythmic waves of vibratorymuscular effort expended in his efforts to maintain balance. On placing a supporting finger against his right side (the side of the injured toe) these waves ceased abruptly.

The birds were carried up into the upper annex of the inner cage.

At 7:50 P.M. Chiisai, as I expected he would be, was moving about complaining. As soon as he caught sight of me he flew at once out of the inner cage, making ~~two~~ right angle turns to get

through the various doors, and was flattened against the inner door of the entry before I could get there. When I opened the door he was on my raised hand in an instant. His complaints ceased at once and were replaced by contented sounds. He settled comfortably for the night. But if I lowered my hand, he sought something higher: my head. On trying to "walk him in", at each attempt, he either deserted me for the nearest higher object or went back to cling on the door. Finally I had to hold him and put him on his proper roost, where he seemed contented to stay.

I do not understand this behavior.

Okii was still where I had put him, although he may have moved about in the meantime.

10:15 P.M. Just went out for a look. Neither bird has moved an inch. (Temp. in court 60).

Chiisai is the Terry of the pair; Okii, the Archie. In fact I catch myself absentmindedly calling each by the name of his prototype and, oddly, to resort to a bull: make no mistake in applying the wrong name to the right bird.

June 30th.

Rhody was not seen after 9 A.M., but at that time came for his mouse, took it with ceremony to nest 8-37. I do not know where he spent the rest of the day. No work was done on 9-37.

Thrasher song in this vicinity has been on the increase during the past few days. I have surmised that Poni, perhaps, has a brood that has just left the nest. Thrasher song was first heard at 5:30 A.M. close to the west end of the house. There was more than one bird.

Okii, for some days, while digging at my feet, has looked up at my upper stories in speculative fashion quite often, as if contemplating investigation of this higher region. Today he put the thought into execution and explored with his beak all the folds and wrinkles in my clothing as high as my neck.

July 1st.

Thrasher song began again at about 5:30 A.M. to the west: more than one bird.

Rhody did not work on his new nest at all and was absent during the day from about 9 A.M. until about 6 P.M. Maybe he is building another nest elsewhere.

July 2nd.

Yesterday's notes apply exactly to today, except that Rhody was absent from about 6 A.M. to 6 P.M.

I went down to his roost tree at 8 P.M. and found him so snugly stowed away in his house nest that it was necessary to take up several observation points before it was possible to see his tail (with a flash-light) flattened up against the rear wall of the house. This was a hot day followed by a warm night such as would warrant one in seeking a cool place to sleep; yet Rhody's attachment to his house has become so strong that he uses it in all kinds of weather: a development that is unexpected.

I found the young thrushes in distress due to the passage of a shaft of sun-light through an opening in the canopy of the oaks.

They were squirming about in the nest, gasping and hanging their heads out over the rim. A shade was arranged for them, and this did not deter the parents from continuing to feed them.

Okii, today, extended his exploration to my head, face and neck, hammering my skull with blows that were somewhat too strong for comfort.
Chiisai, unsettled at 8 P.M., instead of climbing the wire to get upon my hand, flew directly to my head and settled there. Both birds, for the first time, while still showing preference for the corner by the entrance door, would fly up to my hand when held aginst the wire at almost any point.

July 3rd.

At 7 A.M. I was in the cage with the young thrashers. An adult thrasher began singing overhead in the pine tree. I thought I could tell that it was not Poni.
Soon, in the direction of another pine tree 30 feet to the south I could hear a baby thrasher kipping. After a few minutes the adult bird went to it and fed it, and I saw them both. The adult was none other than "Broken-wing": one of the thrasers from Mr. Sampson's place and one of the parents of Okii and Chiisai! The youngster was just out of the nest apparently and its head still bore a plume of natal down. So Mr. Sampson's thrashers did rear a second brood, although they seem to have left his place immediately after I took their first brood.
(Q. Is Poni the other parent of this young bird as well as of O and C? Compare renewal of song to the west with time of capture of O and C).

B-W and the young thrasher stayed until about 9 A.M., when judging from sound, they went down into the lower territory to the north.

Okii and Chiisai, for a week or more, have been suspected of moulting. There are bluish gray places showing in their body plumage, and they are looking shabbier.

Both are now interested in meal-worms for some reason or other especially if I hold the worm box in my lap. Okii now pounds the back of my hand (digging) to get at the box concealed within it. He does not "pull his punches" and, this morning, drew blood. The bills of young thrashers at the age of O and C are much sharper than those of their parents, as has been commented upon before. The parents' bills are worn more from digging. Evolution should have provided them with automatic means of keeping their bills sharp, similar to that given to rodents.

About 10:45 Rhody showed up and sat in his new nest. When he came down he followed me for a mouse, which was carried with full ritual to nest 8-37 instead of to the new one. There he remained for more than anhour resting. About 12:30 he came for another one and treated this with ritual also. (Both were very small). I did not see where he went, but it was not to 9-37.

July 4th.

About 4:30 A.M. thrasher song was heard close to the house on the west and the kipping of a young one: probably Broken-Wing (or the mate) with the same youngster. Song continued at intervals until 9 A.M., when I left for the day.

Julio reported that Rhody was not seen at all during the day.

July 5th.

Again song and kipping about 4:30 A.M. as yesterday at the same place.

Rhody back home again. (Very likely he was here yesterday also) He was not seen to work at 9-37; although he visited it, the one mouse given him was taken, with display, to 8-37.

Okii is now getting very cheeky and, whenever he feels like it, hammers me from the tips of my shoes to the crown of my head.

Chilsai is not so familiar, but as tame in other respects. He now appears much stronger. In order to distinguish him from Okii with absolute certainty it is necessary to look at his feet. When he lost the"core" of his injured toe nail he was lame for a day, but his foot no longer bothers him.

July 6th.

Again thrashers sang and kipped early in the morning as before.

Rhody, hanging about all day, had three mice, all treated with full honors; one being taken to 8-37. No work on 9-37, but a visit or two.

About noon he climbed to the main chimney of the house and gave his full cooing song several times.

The young thrushes are now almost ready to leave. They preen, scratch, peck at surrounding objects and are observant of outside events.

July 7th.

Early morning thrasher song and kipping as before.

About 8 A.M. two hen pheasants were near the cage. Okii and Chilsai scripped at them as they do at Rhody.

At about 2 P.M. these two pheasants, two quail and Rhody were al within 6 to 40 feet of the cage, indifferent to each other and disregarded by the young thrashers.

At the same time the young thrushes were sitting on the edge of their nest, apparently anxious to go. A sudden fright would probably set them off.

Rhody's reaction to pheasants.

2:30 P.M. Just now, accidentally, I had an opportuntiy to observe R's reaction to the pheasants at close quarters. I was following the pheasants toward the cage, and discovered Rhody lying comfortably in the shade of a Spanish broom by the corner of the cage. I might not have seen him had he not raised his head to look at the visitors. One of them walked slowly about 5 feet from him. Rhody merely stretched his neck up to its full length to get a good look at the pheasant and declined to alter the position of his body, resuming his former attitude as the bird passed on. When I spoke to him he said: "Wooh, wooh, woo-o-o-o-" and stayed where he was.

When not thrown off his mental balance by the mysterious urgings of reproductive instincts and his cerebral "vortex" has had time to subside somewhat, Rhody can be a complacent and self-satisfied creature, quite certain that the thing he has in mind at any given moment, takes precedence over all other affairs of the universe. Though, in this state, he is mild and civil, he is none-the-less "sot" in his determination to follow the dictates of his own will. He can be as stubborn as a mule.

Earlier in the day I came face to face with him unexpectedy on the ramp leading to the tool-house. He was carrying a twig and, although momentarily startled by the sudden meeting, instead of retreating, edged around me and carried the twig up to his nest in the glass house. When he had placed it there he came down and followed to the shop yard. There I displayed, one after another, every size and color of mouse I have. He stood like a rock. When one crawled under the tip of his tail where it was braced against the ground, would not even look at it. He was pl~~e~~easant about it, but he was determined to show no enthusiasm whatever, so I edged around him and left him still standing in his original foot-prints.

After a few minutes he came out and went to the cage for meat!

The pheasants stayed around all day frequently passing close to Rhody where he lay comfortably upon the ground in his present favored resting place between the loquat and the cage. Their presence did not disturb him in the least.

About 4 P.M. he came to watch "us" in the cage, making no hostile moves toward the young thrashers digging around me. The probabilities are that he was more interested in keeping in touch with me than in the thrashers, for when I left the cage, he started toward the tool-house, stepped to one side to let me by, lowered his head and cried, then trotted along behind for his reward. This mouse was received with due ceremony and carried off down what used to be the lower road, with frequent halts to face about to bow and hroo and wag his tail.

He was not seen to work on 9-37 at all.

At 7:45 P.M. the young thrushes were still in their nest. These two birds fill it so completely that one wonders what would have happened if all four had matured.

At the same time Chiisai was calling and clinging to the wire at the cage entrance. I went inside and he flew to the top of my head at once. When I took him off he settled on my hand with the usual contented chuckles and gurgles. Okii was already well placed for the night. It is curious how, in so many ways, especially at roosting time, Okii behaves like Archie and Chiisai like Terry.

July 8th.

There was early morning song again close to the house and, a little after 8 A.M., Broken-Wing visited one of the feeding stations in the upper garden for some suet-seed mixture.

Thrushes leave nest.

At 9 A.M. the young thrushes were still in the nest.
At 9:30 there was only one in it; this one seeming perfectly contented with life in his, now, more commodious quarters.
At 10 A.M. he was also gone and one of the parents was making visits to the surrounding shrubbery.

Rhody returns to work on 8-37.

At 10:15 I looked for Rhody, finding him in 8-37 by the living room window. He rattled his beak and cried, then trotted after me toward the tool-house. When we had gone about 50 yards,

and were at a point on the drive-way nearest the thrush nest, he darted into the bushes. I thought the fledglings might be the attraction, but he came out with a large twig, forgot about mice and hurried back to 8-37 with it.

He had evidently been working more on it than I had suspected, for he had again "blown" away all the leaves and dust from his landing place in the road in a roughly circular area about5 feet in diameter, and the hard surface thus exposed was covered with fresh claw marks.

I gathered a new supply of material for him and he began at once to use it diligently with apparently as much enthusiasm as if this were a suddenly discovered new location.

By 10:45 he was back near the cage and promptly accepted an invitation to the shop-yard for a mouse. This was treated with ritual and eventually taken to nest 8-37 and there eaten after hesitating uncertainly at each point where paths branched off.

On the way he visited two windows at different points in order to exhibit the mouse at them. In a half hour he was again back loafing in the vicinity of the cage, paying no attention to any of its occupants.

During the rest of the day he was present most of the time: preening, lying in the shade near the loquat and, in general, taking easy. Meat again meets with favor, and his dish had to be filled twice. Also, at about 6 P.M., he was ready for another mouse, which was treated with honors. At present most mice are so treated, reversing recent behavior.

He was not seen to visit 9-37; 8-37 seems to have been restored to the first place in his favor.

Okii and Chiisai were both strong and active, the latter now more frequently resorting to Okii's specialty of exploring my topography from crown of head to heels. Both seem to consider that when I move to another spot, my feet should immediately be dug about. If I stand long enough in one place they will often dig entirely around the periphery of one shoe and make a sort of rough, bas relief of a foot-print.

Both are intensely interested in the garden loam and leaf-mould carried into the cage. I am usually able to find three or four centipedes to put in it. Of these they are very fond. If I stir the pile with a trowel they keep as close to the trowel as possible or even climb upon it in order to miss nothing.

Both are sure death to yellow-jackets; although Chiisai fears them instinctively, he nevertheless catches and eats them after thorough preparation. Yesterday he was seen to disgorge one several minutes after it had been swallowed and then go over the preparation again thoroughly. (Is it possible that he was stung internally, but that he is more or less immune to the effects of a sting? Other thrashers (see earlier notes) are thought to have been stung here.

Both, on discovering an especially delicate morsel, are apt to carry it to the other one with chuckles, clucks and other inarticulate sounds. This has been commented upon before and it is not clear whether the act is in the spirit of play, or whether it represents an expression of the parental instinct. These notes have recorded examples of the act performed both by mature birds (Brownie and Greenie) and by youngsters just out of the nest, and instances have been recorded where the food is transferred from one to the other, sometimes intentionally (apparently) by the donor, sometimes unintentionally with a chase resulting; also, sometimes the offer seems to have been made to invite pursuit.

The two latest instances are:

Yesterday Okii, finding a Jerusalem cricket underneath a rock turned over by me, ran at once with it to Chilsai and held it a couple of inches in front of C's bill, sitting quietly. C took it gently, but ran off with it; O followed, but stopped short and C ate it.

Also yesterday: Chilsai was given a large spider by Julio. He ran to find Okii; held it as above, but when Okii reached for it withdrew it and ate it himself.

July 9th.

At 8 A.M. I went directly to nest 8-37 expecting to find Rhody working on it; and he was, rattling his beak and crying when I appeared.

At 9 A.M. he was still there and I got him a fresh supply of materials, which he began to use at once. In a few minutes I invited him to the mousery and he followed part way, discovered a twig, picked it up and continued to follow me. After a few yards he seemed to think something was wrong, stopped, "thought", turned about and hurried back to nest 8-37.

At 9:45 I was in the cage digging for O and C when I noticed a shadow on the pile of earth: Rhody on the roof waiting for me to come out, as subsequent events proved. The resulting mouse was taken to the mirror for a long display; thence to a north window of the shop; thence over the roof of the house to the patio; thence up the steps to a window of the living room; thence to nest 8-37. For the last half of his journey he was followed by a complaining russet-backed thrush, who left when he saw R eat the mouse in the nest.

12:10 P.M. I just left Rhody placing a twig in the glass house (nest 2-37, or 4-36). He had been working continuously on 8-37 up to a few minutes before. I found him near the thrush nest: one of the parents complaining overhead. (Their young were seen not far from there this morning). R, however, had no designs upon [illegible] birds, but attempted to pull a dead oak twig out of a small azalea and failed. I pulled it out for him; he took it to 2-37,as stated. Strange bird!

He took the afternoon off, but at 6 P.M. was found in nest 8-37. He followed me to the mouse place, displayed and proceeded down the lower road.

His work today on the nest made a good showing and consisted in enlarging the north east end and making its walls higher. It is an odd nest for a road-runner, and appears to be 3 to 4 feet long and very narrow. While it is all one structure, I am inclined to the belief that it is "psychologically" three nests now, and may be considered as the expression in physical form of three distinct periods of intensified reproductive impulse superimposed upon the normal curve of his nesting cycle.

(This can be represented graphically, as a means of illustration only, with no quantitative significance, as a sine wave: the fundamental wave of his cycle, with superimposed harmonics of higher frequency: the intensified impulses above).

Nest 8-37, then, represents three harmonics on the wave of his reproductive cycle.

Chilsai's lost toe-nail shows no sign of being reproduced as yet. I was well hammered by both of them at once today. They also probed into my ears and nostrils.

When in the cage I have to keep constant watch to avoid injuring them. They get under everything I move: feet, hands, chairs, rocks. They are so devoid of fear that they will not get out of the way of

a foot about to descend upon them, but will reach up to peck at the under side of the sole at anything that attracts their attention there. They are constantly pulling things out of my trouser cuffs and pulling at them. Their attentions have affected my gate even when I am outside the cage, so that I walk around like a thief. If something brushes agaist my shoes or trousers I halt automatically. They are getting me trained!

July 10th.

A few minutes after 8 A.M. Rhody was working on nest 8-37--how much earlier he had been at it I do not know.

An hour later he appeared in the upper garden outside this window, searched for another twig, found it and carried it to the nest.

At 9:30 he was not there; but when I went to see the thrashers, he came from somewhere or other, sat close to the wire waiting patiently for me come out. When I did his response was immediate and together we went to the mousery, took a mouse from hand, displayed, went off down the lower road, changed his mind (and course), cut across lots to display at a French window in the basement near the nest tree, then carried the mouse up to 8-37.

He continued to work at intervals on 8-37 throughout the forenoon. Most of the afternoon was spent loafing and preening near the loquat. His food today consisted of both meat and mice, the second mouse also being honored with display and taken to 8-37.

July 11th and 12th.

During this period Rhody continued to devote most of his forenoons to nest 8-37, though he was seen to visit 9 once and carried one twig to the glass house. His afternoons were spent mostly preening and loafing in the vicinity of the cage. His diet again consisted of mouse and meet; both mice given him being treated with ritual.

His tail now consists of feathers of irregular lengths, since he has been shedding his rectrices and new ones are coming in. I saw him lose one in the morning of the 11th.

His aversion to yellow-jackets has been shown frequently and commented upon in contrast to the attitude of Archie, Terry and also all thrashers of my acquaintance. On the 11th., during one period of back sunning, one of the insects buzzed about his head, was promptly snapped and knocked to the ground where it struggled about near Rhody's feet. Rhody kept side-stepping to avoid it and, at last ran off. We arrived at the cage just as Chiisai was killing and eating one of these insects; thus furnishing a pat illustration of the contrast.

Tail feathers are now beginning to appear upon the ground in the cage, so that O and/or C are progressing in their moult. On Okii's forehead a pin-feather or two may now be seen.

Both Okii and Chiisai, whom I have been able to observe under more favorable conditions than other thrashers, are seen, very definitely to have feathers arranged as eyebrows. They differ in hue, form, size and direction of axes from those adjacent, forming an arc over the eye. The superciliary stripe seems to proceed from their posterior ends.

Both are friendly and confiding and appear to be well and happy in their cage. ~~Archie~~, twice now, has perched on me and sung

his sweetlittle slumber song while dozing intermittently: once in the crook of an elbow and once almost against one ear, where the slightest nuance could be detected--even the slight sound made by the gape as the edges parted company in the act of opening the bill.

Except for this slumber song, Okii sings very little now and Chiisai even less.

July 13th.

Rhody spent a large part of the forenoon in nest 8-37 doing not much of anything.

When he came down about 11:30 A.M. the thrushes, wrentits and Broken-Wing made warning sounds. The wrentits had been inspecting him in the nest. Broken-Wing had been eating at one of the suet-seed feeding stations. (She(?) appears there often now). One of the thrushes was carrying food; so the youngsters are apparently still present.

Rhody ran toward the mousery (as I thought) but, on the way, discovered a twig which he took up into the glass house. A visitor now arrived, especially to see Rhody (Mr. Preston, who had never seen him). Rhody proved most tractable: Coming first to take meat from hand, then a mouse. He also displayed with the mouse at the mirror, "did" both kinds of "sun-fits", allowed us to stand alongside him in the spread-eagle one, carried the mouse about for a half hour, then ate it in our presence. A good show.

At 2 P.M. I found him again working at nest 8-37.
At 3:30 " " " " " " " " "
At 4:00 " " " lying near the loquat. He moved from sun to shade from time to time, and:

At 4:30, came to the cage, inside of which I sat, watching the reactions of O and C toward a lizard in a bottle. As Rhody had been making unsuccessful efforts to disgorge a pellet during his loafing spell, it seemed a good idea to let him have the scaly lizard to polish out his interior piping, consequently it was put before him. He flirted his wings over it in the shrugging gesture-an action which seems to be inspired more by reptiles than by anything else--stalked around it in his cat-mouse behavior, then started for the mirror. But a tremendous noise coming from a house under construction not far away, caused him to drop it. Next voices close to the fence in my neighbor's yard caused him further worry. He remained semi-frozen for several minutes, but finally retrieved the lizard, who had been playing 'possum all this time and had not moved, and carried it off. In a few minutes he was back again : this time coming to my feet, where he seemed inclined to present it as to a mirror. The intention seemed so indefinite that I looked down at my shoes to see if they were sufficiently reflective to warrant such action. As a matter of fact they happened to be fairly bright, and R was looking directly at them less than 2 feet away, but not displaying. The mirror was only 10 feet away and he proceeded there to display fully.

He now carried the lizard off to the west. I did not look for him until about 5:30, finding him in nest 8-37, still with the [illegible] reptile, which he soon swallowed after whining as I talked to him.

At exactly 6 P.M. I looked out of the living-room window at the precise moment when he rose from the nest and dropped down to the driveway. He now began to investigate the activities of other birds in the shrubbery with theatrical poses, feints and rattle-boos, following up by pulling off one of his ridiculous circuses. This preceded a more or less sober march down the lower road toward his night roost.

Okii and Chiisai have now reversed their recent attitude toward meal-worms and are now fond of them. Okii, like Archie--to continue the parallel between these birds and the young road-runners--was prompt in discoovering the association between meal-worms and the box in which I carry them, so that almost immediately following the revival of interest in these creatures, more sight of the box brought him up into my lap to get them. Chiisai, like Terry, was slower, in fact, he responds but rarely. However, when he sees what Okii is doing, he is very apt to follow.

July 14th.

Much the same as yesterday.

Rhody continued to eat both meat and mice and displayed for all of the latter. He worked on nest 8-37 occasionally and also sat in it quietly a matter of hours--perhaps 4 during the day.

Broken-Wing now visits Brownie's feeding station and carries food from there to the brood.

Okii and Chiisai have lost the "black" color of their irides and have taken on the same coloration as Greenie. As yet there is no evidence of the redder hue of Brownie's. (But see July 16th.)

July 15th.

Rhody found me about 10:30 A.M. and wanted a mouse. Display followed at convenient reflecting surfaces, including the newly discovered French window in the basement, and the mouse was eaten in 8-37. After this followed addition of more twigs to the structure and more rest.

Due to absence, no further observations were made during the rest of the day.

July 16th.

With regard to the color of the irides of O and C, referred to in notes of the 14th.: I believe, after more careful examination, that a warmer tone is now creeping in, and that it is more marked in Okii than in Chiisai. It seems to commence at the outer circumference of the iris.

Okii and Chiisai are now fully convinced that they have been overlooking something in the past in disregarding meal-worms. Since the change Okii has become more vocal, in that he now yips , like Chiisai, when he wants worms.

I did not see Rhody until he showed up at the cage in the early afternoon,(about 1:30). The rest of the day was spent loafing and so forth. He had no mice, but condescended to look at my offerings. Meat was all he took.

July 17th.

Rhody repeated yesterday's behavior as to time of appearance, b but, after eating meat at the cage and having a good rest, followed me for a mouse, which received full honors. Just before this he gathered a sheaf of pine needles and placed them carefully in the nest in the glass house.

Chiisai is gradually coming to associate the worm-box with food. Okii's association is so strong that he almost seems never

to forget its existence. When he sees me completely hide it under a hand in my lap, he makes strenuous efforts to get at it by pecking and pulling at my fingers. In this last act the curve of his bill is seen to be of importance, as he hooks his bill over a finger and pulls hard without its slipping off.

Thrashers are now haunting the vicinity of the oval lawn regularly and song is being restored at this place. They are moving in. If this is a permanent immigration, what will happen when O and C are released?

Thrush feeds nestling with faeces.

On projecting a motion picture film just received from the processor (exposed July 6th.) I received a surprise. The film shows a parent coming to the nest, feeding one chick. This chick then defecates. The parent reaches down takes the faecal matter and feeds it immediately to the other nestling!

In connection with Brownie and his numerous nesting activities it has been shown that the parents eat the droppings instead of carrying them away, and that, on at least one occasion, the other parent reached across the nest and "asked" its mate for the matter thus salvaged, and was promptly accomodated and ate it at once as if it were desirable food. All of this suggested that the digestive processes of the chicks were incomplete and that their faeces contained food elements attractive to the parents. It further suggest that this is a provision of nature to insure proper scavenging of the nest.

The instance noted of the thrush carries similar implications, although it is not known that it represents standard behavior, of course. Incidentally it also shows the value of motion pictures as an aid in the study of life history. The only place from which the interior of the nest could be seen (while the parents were at the nest) was 12 feet from the nest at a point on the parapet of the tool-house roof. At that distance--the nest being usually in deep shadow--only the fact that a reflected beam of light was thrown into it and a telephoto lens was used on the camera made it possible to record (or even observe in detail) this behavior.

July 18th.

10:30 A.M. There has been almost continuous thrasher song since early in the morning: mostly in the vicinity of the oval lawn. The performer was seen to be Broken-Wing. This bird also has never heard of my gentlemen's agreement with Brownie designed to insure the integrity of the greensward, or if so: disregards it --perhaps on a technicality. However, the moths which presumably are responsible for cut worms (?) have been observed at night for the past couple of weeks hovering over and on this grass patch. Neighbors (as these notes show) have complained of the ravages of these worms upon their lawns. Since I have not had this trouble, I have recommended to them that they engage thrashers to attend to the matter, stating that thrashers--on a well established lawn--do little damage, and that for but a brief period in the year.

The holes they make, on such a lawn, are of about the same order of magnitude as a gardener would make in removing small weeds. (But a new lawn!).

Again Rhody was not seen until early afternoon, when he appeared on top of the cage, later helping himself to meat and doing the usual things. About 4:30 P.M. four visitors wished to see him. He was then north of the fence in the baccharis, but

came to call and climbed over the fence in the presence of six persons. He, however, would not accept a mouse and wandered away.

Since Okii and Chiisai have become meal-worm addicts they have grown noticeably tamer. The meal-worm is a civilizer after all. Today while I was placing an electrical fixture inside the cage (a wall socket for easy connection of the remote control of the camera) about four feet from the ground, they climbed up to my hands pecked at the screws, ~~xxx~~ screw-driver and fixture. As long as they sat on my hands I could do nothing. Chiisai decided to "do a sun-fit" there and Okii moved up to hammer at my neck and probe into my ears. They were absolute nuisances.

For the first time today Chiisai made frequent application to the soft-food dish and ate freely, and entirely on his own initiative. This, I hope, indicates his final "breaking-in". It has taken 59 days for him to see the light! He seems now as strong as Okii.

July 19th.

About 8:50 A.M. I went to the cage, finding Okii and Chiisai unusually active and both yipping. They rushed to the wire on seeing me and dashed into the entry as I opened the inner door. Although they had plenty of food available, both, especially C, were hungry. Feeding them by hand did not stop their yipping. It is ~~a~~ rarely that Okii yips. Except for this restlessness and noisiness they behaved in normal fashion. I was unable to discover any reason for it.

It was noticed, however, that, for the first time, "The fly" was riding around on Okii's head, although he did not appear to notice it. Yesterday he had been seen to start once or twice as Brownie used to do when presumably bitten by one of these insects. After a few minutes, Chiisai in one of his quiet moments, probed hurriedly at different points of his anatomy, flew to my shoulder and almost simultaneously a small fly appeared from somewhere and was promptly snatched out of the air close to my ear, killed and dropped. Okii at my feet, instantly gobbled it, so I could not "collect" it. O continued to yip and C settled for a short nap, occasionally yipping softly, but soon was as restless as ever.

Rhody's semi-spread eagle sunning posture.

Meanwhile Rhody, who apparently decided to stay home this morning, came to the cage, looked at the meat, but went off a few feet to preen on the circular-saw bench. I went to him to observe I could count but 8 feathers in his tail. It was warm enough for the "spread-eagle" sunning pose, but, as is usual when the surface upon which he rests is too irregular or too confined in area, he used only the semi-spread type. Seen at 4 feet distance and at waist height, in the brilliant sun he was a really beautiful picture. He held the pose for several minutes fixedly.

In this pose he stands instead of lying down; bows his head down nearly to the level of his feet; erects crest and displays his skin colors; spreads wings out horizontally to their fullest extent, but instead of being flat, they are flattened domes; spread his tail fully. spread

The attitude, depending upon ones point of view, is curiously that of one who stands upon an eminence with bowed head and asks a benediction upon a surrounding multitude; or, of one bowed in humility before a conqueror and asking mercy.

Notwithstanding this reverent attitude, R was quick to follow me for a mouse. This one was at once eaten without any foolishness: the first not honored with ritual for several days.

Rhody now proceeded to the roof of the house and was still up there at 10:45, sitting on the chimney preening.
Okii and Chiisai were still yipping and restless.

July 20th. to 22nd., incl.

During this period there were few new developments. However, it was found that Okii and Chiisai could be quieted if given mealworms. So far this has worked every time and it seems that unsatisfied appetite is at least one of the causes, still, of this yipping and restless moving about, and that actual living food, in addition to that furnished them, is necessary to satisfy their cravings completely. When thus satisfied, they become sleepy and like to follow me out into the cage entry and there, provided I hold my hands high enough, climb up to them, lie down on them and doze, now and then reaching out to touch gently with their bills any portion of my anatomy within reach.
Chiisai still wants to be fed by hand.

Rhody showed a growing tendency to absent himself during the forenoons and to omit ritual when given mice. Thus, during this interval, only about one in four was thus honored.

Thrasher song diminished again, although Broken-Wing seems to remain here most of the time. I neither heard nor saw the brood during these three days.

Mr. Sampson says that a new thrasher, much tamer than Broken-Wing is now at his place.

July 23rd.

No new trends. Rhody is undoubtedly (unless he is building another nest elsewhere) on the downward slope, either of one of his nesting harmonics or the fundamental wave itself, for he has been neglecting all of his structures at this place for several days. A mouse given him today was also eaten without ceremony.

July 24th.

Okii sings full song!

The great event of the day was Okii's sudden breaking out into veritable, rich, loud full-song . It happened as he caught sight of me about 50 feet away carrying a box of peaches just gathered in the "orchard". It was a keen surprise, as it was not only the first instance heard, but there has been absolutely no gradual development of this song from the immature sub-song, or from the slumber- and digging-songs. The latter two songs have differed fr from the sub-song--as far my ear could detect--only in the occasion of their use; that is: the sub-song--the substantial equivalent of Brownie's quarter song--has been used both when digging and when dozing. Moreover, since first it was heard, there seems to have been no considerable improvement in it either as to volume, musical quality or variety. Consequently this full-song has appeared not as something that has evolved, but as something that has "just happened". Another surprising feature of it is, as these notes show, both Okii and Chiisai's efforts at song have declined greatly in frequency since they first initiated them.
Naturally, also, the fact that the bird is only two and a half months old and is, moreover, in the moult, makes the event all the more interesting.
(O and C left their nest May 20th. On May 22nd., see p. 1457

"Okii developed a sweet little warbling song". Two days from the nest! This was not an accident, as the notes following show).

This first full song was heard at about 9:35 A.M. Julio reports that, while trimming trees during the afternoon in my absence, he heard it twice again, and that Okii will be a "much better singer than Broken-Wing".

Rhody, following the practice of the last few days, kept himself out of sight during the forenoon, but early in the afternoon, appeared at the cage for meat and loafed around until time to go to his roost.

The mouse given him, once more, was bolted still kicking, without benefit of ritual.

. .. .

(I have just looked at last year's notes of corresponding date (See p. 1230). Curiously his present behavior is exactly paralleling that of the same period of last year, as shown by the entry for the period of July 21st. to 24th., incl.; in both cases exhibiting the same morning absences and the same indifference to nests just recently under active construction).

July 25th.

I woke up at 4 A.M. and listened. A thrasher was making inarticulate sound nearby. I went to the window and listened The bird was in a tree about 30 feet from the window and I judged that it had probably slept there. About 4:45 it began to sing loud, detached, widely spaced songs. Abot 5 the sounds ceased, but were soon heard on the other side of the house; a thrasher was at the feeding station in the patio eating the suet mixture.

Rhody, as if to make certain that no false deductions would be drawn from his repetition of last year's behavior at this season, elected this day, to remain continuously where I could see him from 9 A.M. until after 5 P.M., at which time he accepted a mouse without display, gulped it, then headed off toward his night roost.

Okii was not heard to sing (by me) during the day, but Julio says he heard him twice while I was away in a different part of the grounds.

Chiisai is sprouting a new rectrix. It appears that the original was lost by accident and not through moult, as the moult of both birds seems to be, as yet, confined to the soft feathers.

Chiisai's claw. I see no certain evidence of a new claw taking the place of the one lost, unless a sort of a nucleus visible there is such a beginning.

Thrasher Eye-color. Okii's eyes, confirming recent suspicions, are now showing a definitely warmer hue of the iris than Chiisai's.

July 26th.

Rhody took the forenoon off, but got back on the job about 1 P.M. and ate his meat; thereafter proceeding to loaf in the vicinity of the cage.

3 P.M. Still there.

4 P.M. Drs. Grinnell and Miller came to see the birds. Rhody still on the job and received a mouse for good behavior in the presence of the visitors.

He did not display with it.

Okii and Chiisai were not alarmed by the visitors, even with Dr. Miller in the cage, their attitude toward him seeming to be about the same as toward me; Okii jumping to the closed worm-box in M's hand in demonstration of his "worm-box association." "The" fly was also shown riding around on Okii's head: also the magpie's "feather reflex". These birds responded to Dr. M's presentation of a feather just as in my case.

July 27th.

Rhody had a small mouse in the forenoon and a large one in the afternoon. Each was eaten as soon as killed, without ritual. I gave him the first one on finding him sitting on the table in the shop-yard watching the white rats. He doubtless had seen me enter the yard a few minutes before.

Yesterday (I forgot to record it) Okii developed a taste for Hamburger all of a sudden. Curiously, it was brought about by my nephew's (D.D.C) offering it to him, O taking it from hand. Since then this meat is on his approved list of foods.

"The" fly is now bothering both birds, causing them to make sudden leaps into the air followed by frantic "stampedes" and probings.

On the 25th. (also overlooked in recording) Rhody was victim of a similar attack, responding in exactly the same way, but with fervor of execution proportional to his size. Thus he jumped suddenly 2 feet straight up from an attitude of complete repose and shot by me so fast as to appear as a straight line in space.

July 28th.

There has been heard no song of free thrashers for several days and Okii's efforts at full song are rare.

Chiisai's recent promise of growing up and getting his own food from the soft-food dish has not been fulfilled. He is still a baby and wants to be fed by hand in addition to the results of his own foraging in the earth pile and about the cage. Except for this difference he seems to be as adept as Okii in getting food for himself.

It is now possible to distinguish O and C by the appearance of their irides alone. C still has Greenie's eyes, but O appears to be rapidly approaching Brownie's color.

About 9 A.M. (C had been fed three times already) both thrashers began to scrip. They had caught a glimpse of Rhody taking the featers off of a young bird! It appeared to be a linnet.

Chiisai is being much tormented by "The" fly (?) although I can not see the creature. Between stabs he is clearly awaiting the next one in dread.

Mr. Cain says this fly is one of the Hippoboscidae.

July 29th. to 31st., incl.

During this period Rhody refrained from nesting activities at this place; as far as known, entirely. All mice given him were eaten without ceremony. I am inclined to think that this behavior indicates passing of his nesting urge for the season but it may merely be a manifestation of the dying out one of the "har-

monics" superimposed upon the fundamental wave of his present nesting cycle.

No songs of outside thrashers were heard during this period, but Broken-Wing is heard frequently making isolated calls. This bird is suspected of roosting for the night in a tree about 10 feet from one of my bed-room windows on the west. Nothing was seen of B-W's brood.

Okii was heard several times singing short snatches of approximate "half-song" but no full. Chiisai was not heard to sing at all, except digging song like O's.

Chiisai has renewed his interest in the food dish, but still prefers to be hand-fed and still quivers his wings.

Both still occasionally "offer" each other some article of food. Sometimes the act appears to be definitely intended as an invitation to a chase; at others as a real offer of food.

On the other hand, there is more or less frequent manifestation of the opposite attitude: defense of some especially attractive tidbit. When this occurs, the bird with the centipede, cricket, or whatever it may be, resents the approach of the other, drops its prey (or else swallows it hastily) and advances to meet the other and drive it off. The attack seems to be centered upon the other's bill. Unless the newcomer retreats at once--which it seldom does--there is a spirited set-to in which both birds behave just like fighting cocks for a few seconds. If I place my hand between them, one or both usually pinch a finger hard and then all is peaceful again. Chiisai seems to be the more jealous of his findings.

Late Quail nest- in a can.

On the 31st. one of the brick layers working on a wall around the Nichols' garden pointed out a can about 20 feet north of my north fence and said that there was a quail's nest in it. Investigation followed. The can is a one gallon one, entirely in the open, with no concealing growth whatever about it. It lies with its open end to the north and slightly raised. Men and trucks pass it frequently. As judged by the tracks: a wheel must have grazed the can once while it was being used asa nest. There are about 20 eggs in the can, as I saw at a time when the hen was temporarily away. This is a late nest.

August 1st.

Okii wants to build a nest!

The high light of to day was the discovery that Okii, whose career out of the parental nest began May 20th. and whose age --from the egg--is therefore approximately 86 days, wants to build a nest of his own. Both birds for some time have occasionally picked up twigs, rootlets, pine-needles and similar small objects, carried them about for a few seconds making excited "comments" all the while, and then dropped them.

This morning, however, Okii discovered a piece of rubber insulated wire and attempted to carry it up to the framework upon which Archie and Terry based their own nesting operations, but dropped it in flight. I picked it up and handed it to him in the nest. It was taken with the same "talk" (of which more later) and carefully placed. Other material offered was similarly received and placed, although most of it dropped to the ground, where Chiisai fussed with it, also talking. In aminute or two both lost interest.

Thrasher "talk". In connection with this apparent manifestation of the nest-building instinct the "talk" consisted of low tsips, "churkles", chuckles, cluckings and other inarticulate sounds, rapidly uttered and of low intensity: audible perhaps 5 or 10 feet. It is impossible to describe accurately. It is a pleasant intimate sound and undoubtedly possesses some significance.

To my ear it is the same "talk" (at present) heard on the following occasions:

(1). When one bird "offers" the other some delectable morsel either in earnest or in play.

(2). When one bird finds, and is interested in, a bit of material suitable for a nest.

(3). When the two birds, meeting casually (I.e. without apparent design) are disposed to greet each other. At such times they may also nibble at each others bills and also "talk" silently with wide open bills, just as Brownie and Greenie frequently did.

(4) When one of the birds, more especially Chiisai when not hungry, climbs upon my hand or shoulder. (If hungry he usually yips softly or makes a sibilant, two-syllabled call: one note followed by another of lower pitch, like Brownie's

Tsee
Poo.).

Chiisai, almost invariably, if not hungry, "talks" to me in this way when alighting upon me; Okii is more apt to be silent on such occasions.

Rhody, during the day, adhered to his standard behavior of the past few days. In accepting his mouse some discrimination was shown. The large mouse given him was accepted at once, killed and then abandoned. He then returned at once to me and stood facing me patiently. I got him a smaller one, which he gobbled at once. The other one was "too much something" or " not enough something else".

August 2nd.

Okii again, for a few minutes in the morning only, showed his nesting urge. This time he actually carried material of his own finding and placed it without guidance from me of any sort. Chiisai seemed disposed to help, though ineffectively.

Rhody performed as usual during the day. His forenoons are now mostly spent in wandering about the neighborhood foraging and observing affairs, such as building operations, in the vicinity. Early in the afternoon he comes to the cage for meat and spends the rest of the day preening, lying in the sun, and waiting for the time to come when another mouse is in order. During the last two or three days he has also renewed his habit of sitting in an acacia at the north fence that gives him the proper proportion of sun and shade without requiring him to move from one to the other. (See last year's notes at this (?) time).

August 3rd

Okii, in the morning, was less interested in nesting, but Chiisai a little more keen.

Rhody continued present trends: including resting in the acacia.

Chiisai is showing a growing inclination to meet me at the cage door, fly to my shoulder when hungry, make the hunger call and ride upon me to the food dish and there, still on my shoulder or hand, await a "shot" of soft-food from the medicine dropper.

Okii has consistently refused to accept food administered in this way for a long time (2 or 3 weeks?) but he likes to have the dish held out to him.

Both like to sit on my hand and have me hold them up to inaccessible corners and crevices where they can probe for insects, but they do not like to be handled, that is: restrained; held; caught.

Unlike the road-runners, neither objects seriously to being confronted in a corner.

They are perfectly confiding.

They catch so many yellow-jackets that these insects form a significant proportion of their food supply. While they are still pretty thorough in preparing them, they are not so much so as formerly, and the 'jackets are sometimes swallowed while still capable of some movement of legs.

August 4th.

It was Chiisai, this morning, that was the more interested in nesting, and although he (?) did not actually carry material to the nest, he worked in it frequently and also arranged it when it was handed to him. Twice he brought pine-needles up to my shoulder and dropped it there. Once he carried a needle up to my hand held head-high against the wire and was there joined by Okii, both probing about with their bills as if to find a suitable place to put the needle and "talking" over the problem. The impulse soon subsided only to reappear from time to time when I visited the cage.(Time now: 11:30 A.M.).

Noon. Rhody is at his everlasting preening,near the cage. During the moult he spends hours each day at this job. Chiisai, on coming to me for food, brought a pine needle, talking.

Rhody spent all the rest of the day in the vicinity and on the top of the cage preening,sunning and keeping an eye on operations where I was dismantling the wind screen protecting Brownie's Oct-Nov. nest of 1933. (See photograph p. 483 A). Here an alligator lizard was uncovered and offered to Rhody. (It had lost a part of its tail and a new portion about one inch long was in process of growth). The lizard, after being played with according to form, was finally eaten, and less than an hour later (but more than half an hour) it was seen that R was trying to disgorge something; so I went over to watch. He made perhaps 40 or 50 more attempts without success (I could hear a slight sound in his throat) then came to stand 4 feet from me and preen for a long time. Lately Rhody has eaten only one mouse per day and meat in about equal bulk, possibly a sign that he was getting "lined" with mouse fur. In earlier notes it has been suggested, more or less jokingly, that a lizard diet might serve to loosen up some of this accumulation, and this incident suggests that there may be a basis of fact in the idea. I was disappointed in his lack of success as I had hoped any matter disgorged my throw some light upon the rapidity of his digestive processes.

While he was preening beside me it was seen that the sharply pointed tips of the feathers.f...... (An interruption here. This paragraph of Aug. 4th. notes is being written on the 5th. At this moment: 10:56 A.M., Rhody has just sailed down past the window. He is at the open door, looking in....I went out and he was given a piece of meat. He is basically a green bird).

To return to yesterday's observations: It was seen that he had lost the sharply pointed tips of the feathers of his upper back, scapulars and wing coverts. When his wings are closed, it is these feathers that determine the predominating color of his body as seen from above and to one side, that is, from the average view-point of a spectator when the bird is on the ground.

These feathers are predominatingly bronzy green, with edgings of ochraceous tawny and white in bands parallel to the contours, the white being outside. Since the sharp tips are now gone, each terminates in a notch. Since these tips do not have exactly the same distribution of the same colors as the main portion of the feather it is evident that their loss~~s~~ causes the bird to have a somewhat different coloration at this time of the year. Without examination of the bird in detail before and after loss of the tips it is impossible to say just what this change should be. At presen I can only say that I have an impression that he is less tawny just now than he was earlier in the year: more green and more white. But this can not be relied upon. Somewhere in earlier notes (I have not looked them up) references have been made to suspected changes of this sort).

August 5th.

Rhody was at the cage at 7 A.M. (Julio).

I went out at 8:30. The young thrashers came with a rush as I entered, Chiisai bringing a bunch of pine-needles to deposit in the crook of my elbow with much talk, followed by probings all about my upper-works. Okii soon joined him. Chiisai now left, without leading action of mine, to arrange twigs in the nest in the inner cage and was there joined by Okii, both of them fussing with the twigs and talking to each other. After half a minute or so, C dropped down, got another twig and carried it about on the ground for several minutes, then dropped it. This ended the nesting activity for the time.

About 9:30 I went out again. The thrashers were scripping, indicating probable presence of Rhody, though I could not see him. However, as I opened the inner door of the entry, it scraped on the wire roof and I looked up to see what caused the unusual sagging. It was Rhody, who picked up and examined carefully, first one foot and then the other. The door had probably contacted them slightly, but he was not hurt or even frightened. Soon he came down, discovered, played with, then ate a lizard found at the lumber pile, to appear later at this door as prematurely recorded in catching up on Aug.4th. notes. First, however, he played with the young thrashers by dodging about one corner of the cage and making theatrical gestures with occasional soft rattle-boos.

Rhody and young thrashers.

In this connection, it should be noted that O and C, now, seem to scrip at him (without looking at him) only when they catch sight of him after not having seen him for some time. They are not excited when he hangs around indefinitely. They are, in fact, curious about him, and as in the present instance, despite his cavortings, move closer to have a good look.

Chiisai and hummer.

Yesterday I was holding Chiisai so that he could pick off ants that were climbing up a post of the cage, when an Anna humming bird buzzed about 6 inches from him. This startled him and he flew away.

Both young thrashers like to have me hold my hands where they can sit on them and reach the ant columns going up and down

the posts of the cage.

Rhody scarcely left the place during the day and was given no mice, but he ate meat.

August 6th.

The principal events of this day centered about a young gopher snake about 18 (?) inches long. This snake was taken into the cage for the benefit of O and C. Rhody saw it being carried there and was at once intensely interested. He came close to the wire to observe events. O and C would not approach it nearer than about 2 feet, circling around it in tense postures with raised heads and tails, but remained silent. (I got some motion picture shots of the action of doubtful quality. In one of them the camera is swept from the thrashers and the snake to Rhody watching through the wire).

The snake was now taken out and offered to Rhody, since he was so keen about it, but he seemed to regard it now as something merely to be gazed at dispassionately. A complete reversal of attitude, for when Julio was carrying it to the cage, he had to keep Rhody from seizing it. R had had a large piece of meat about 3 hours earlier and I suspect that, in his judgment, the vacant space in his interior was too small to accommodate the reptile. I acted on this assumption, or rather, refrained from acting, as it was thought that Rhody was really hungry and here was a case where he (again) preferred something different from the food offered, and I wanted to see what he would do about it. So I waited. After hanging about me for a few minutes longer, he rattle-booed and started toward the shop-yard, pausing at intervals to see if I was following. He lead all the way to the mousery and took at once the large mouse offered, downing it without ceremony, then returning to his loafing place near the loquat until it was time to saunter to the roost tree.

August 7th.

At about 9 A.M. I went to the cage. Both thrashers came into the entry as soon as the inner door was opened: Chiisai bearing a long, thin root about 18 inches long, which he deposited upon my hands as soon as I made a "shelf" for him against the wire. Okii joined him there and the root fell to the floor. Chiisai whet down, got it and started carrying it about. I went into the inner cage and stood near the "nest". C followed, climbed up my back, jumped to the nest and placed the root carefully. He was again joined by Okii and they worked for a few minutes ineffectively, stopping when I returned to the entry only to follow me there and select suitable posts on my upper-works to preen.

About 9:30 A.M. I returned to the cage to find Chiisai working in the nest and carrying up fresh material to it, all without guidance from me. He has made little showing, as nearly everything falls to the ground, but I noticed that the insulated wire, referred to in earlier notes, had been returned to the nest.

About 10:30 I took an old towhee nest into the cage, holding it elbow high. Chiisai flew to it immediately and began to dissect it. Okii followed and it was wrecked quickly. The object of the birds appeared to be food, not nest material. The remnants were put in "their" nest. Both birds followed and threw most of it out making no attempt to arrange as a nest. Again the object appeared to be food.

11:30 A.M. Julio tells me that Rhody has just been "chased by a quail". Questioning brought out the fact that a hen quail with six youngsters darted out from under a rhododendron at Rhody and chased him about 20 feet, when both birds stopped--the quail to return to her brood and Rhody to go to the cage and eat a freshly killed house mouse that J had just caught in a trap.

During the rest of the day Rhody was about most of the time. About 5:30 he went to inspect his meat dish, but there were too many yellow-jackets in it to suit him and, although he reached for the meat once or twice, he withdrew without getting any. He then accepted an invitation to follow to the shop-yard for a mouse. No display.

The young thrashers paid little further attention to their nest, but occasionally picked up material and carried it about.

Moult of young Thrashers.

Okii and Chiisai are now very shabby as to plumage--C more so than O. His plumage was rougher from the beginning. Pin-feathers are appearing at various places on them.

Natal down not gone.

Both still carry remnants of their natal down on the backs of their heads.

Chiisai's toe.

It is now possible to see a minute, horny pimple coming on the stubby end of Chiisai's injured toe: presumably a new claw.

Okii's song.

Okii sang much during the day: no full song, but "quarter" an and "digging" song sometimes for 10 minutes more or less continuously.

Digging song.

This digging song, so characteristic of the California thrasher, gives one the impression that the bird is most happy in its occupation and, I believe, even the most hardened antianthropomorphist seeing the bird thus engaged close at hand, would find it difficult to preserve a completely objective attitude toward it.

August 8th.

9:30 A.M. At 7:30 A.M. I went to the cage. The birds, contrary to custom, did not rush out to me--they were at the nest. Okii was working diligently in it and purposefully. Chiisai, nearby on the ground fussing with material, at once climbed to my shoulder to talk and hop back and forth to the nest. Okii, instead of moving twigs about aimlessly, was placing them accurately, and, to my astonishment, soon began to shape the interior (although there is little upon which to work) by lying down, fluttering his wings and pressing his breast against the almost nonexistent sidewalls! Birds only three months old--in the moult--with natal down on their heads and at the end of the nesting season!

When I returned to the outer cage both birds followed. When I drew out the worm-box, both were up on it instantly. This did not surprise me as to O, but Chiisai had never shown such prompt recognition of the import of this action previously.

Later, about 9:45, Rhody was present on top of the cage and I refer to him as a witness of a second, though less active manifestation of the nesting instinct.

About 10:30 Okii began what proved to be a long digging song, perhaps 10 minutes, of extremely varied character and high quality. Allowing for human fallibility, there were phrases that I have

not heard from a thrasher before. One of them, especially melodious, was strongly reminiscent of the song of the bird sold here under the name of"Japanese, or Peking, nightingale, or robin". (A babbler: Liothrix luteus, Encyc. Brit. (?)).

Familiarities of young thrashers

About 10:45 I was working in the cage; the young thrashers interfering with every movement, inspecting and pecking at screws as they were being driven in, thrusting their beaks into the loops of screw-eyes as I was twisting them into place and reaching for flies that buzzed about my ears. They prodded at the pliers in my hand and hammered the back of my neck. They tapped the top of a shelf even while I was driving nails in the bracket holding it in place.

Behavior of this kind is typical of every young bird with which I have become intimately acquainted. Amongst them are numbered: the Blackheaded Grosbeaks('Dum and 'Dee); the Bullock Oriole (Orrie); the Road-runners (Archie and Terry); and now the California Thrashers (Okii and Chiisai).

Rhody now (11 A.M.) visited his dish for meat, but again, deferred putting his ideas into full execution on account of the yellow-jackets. He therefore was quite ready to surrender when I came out of the cage and trot along beside me to the shop-yard. The anticipated mouse was put to strictly utilitarian service: no hrooing, bowing, tail-wagging. This business finished, Rhody retired to his "optimum-light-and-shade"acacia to sit on his favorite branch 6 feet above the ground. (Acacia latifolia or longifolia, depending upon the nurseryman from whom it is bought!)

Incidentally, the hard, black seeds of this acacia are attractive to the Blackheaded Grosbeak.

August 9th.

Uncoordinated nesting activity continued sporadically on the part of the young thrashers, Chiisai being the more persistent. In some way I seem to form part of the picture in his mind. Thus when a rootlet, fibre or twig is being carried about aimlessly, it may often be brought to me, and if I then go into the inner cage and stand by the "nest", Chiisai (and sometimes Okii) will then follow, climb up me, jump to the nest and there place it more or less carefully and accurately. This happened twice today.

Chiisai is now much shabbier than Okii; covered with "blue" spots and showing numerous pin-feathers, especially about the wing coverts. There are bald patches on head and neck.

Rhody ran true to recent form: No nesting activity; no display on being given a mouse; not even sitting in nests. (Perhaps the statement as to no nesting activity should be qualified, as he does occasionally pick up bunches of pine needles and carry them for a time with no definite objective in sight.

August 10th.

Little change, although O and C gave less attention to their nest. What little work was done on it seemed to be of a negative sort, as the structure is now stripped down almost to the original artificial foundation placed there by me.

Chiisai obliged with one of his rare digging songs.

Rhody was not seen until about 3 P.M., perhaps because it was a hot day (90) he was in a cool, shady place where there was a breeze (There were such). When he did appear he loafed around for an hour or so doing the usual things before his actions began to indicate that he was now in a receptive mood. I affected to ignore him when he began to show increasing interest in my immediate vicinity, with the result that he walked by me and disappeared. A surreptitious peek disclosed him behind me on the road standing quietly waiting. When I stood up he headed for the shop-yard, going all the way without a backward glance until he arrived at the mousery. There he stood and waited patiently and was, of course, duly rewarded. No ritual.

August 11th.

82 deg. in the court at 9 A.M. The young thrashers were found surprisingly active with twigs, leaves and so forth, and ready to "build a nest" on my hands. Okii had a sham battle with a magnolia leaf, and when I used the leaf as a weapon, responded at once as if it were a real opponent of his own kind.

I forgot to record that, yesterday, in order to protect several cuts and bruises on my hands from the thrashers, I covered them with adhesive tape. O and C were pecking at them and eating the blood. Now they try to pull off the tape.

Also overlooked in recording: Okii learned very quickly to take the cover off of the worm-box, although dynamics and kinematics are beyond his ken. Thus, in pulling it off, which he does by hooking his bill under the far side of the rim, he may stand on the cover; thus, in effect: trying to lift himself by his own bootstraps. Also, he may hook his bill under the box itself instead of under the rim of the cover at the parting line.

About 11 A.M., a fine little quarter song was heard as I approached the cage. It was by Chiisai.
Okii, digging in a heap of compost, discovered a long, thin root, and with much talk, carried it directly to a certain place in the upper annex in which he has lately shown interest.
Rhody had also taken his meat from the dish.

During the rest of the day occasional manifestations of the nesting instinct were observed. These seemed to be stimulated by my presence, as if, in some way, I have become linked with that portion of their life pattern which has to do with their reproductive activities.

About 4:30, when I was not sufficiently responsive to Rhody's mouse-leanings to satisfy him, he again decided to take the initiative and partly lead, partly accompanied me to the mouse abode, where all ceremonies were dispensed with, once again.

August 12th.

At 8 A.M., as I opened the inner door of the cage entry, both thrashers flew at once to my shoulders and began to prod about and talk. This finished, they dropped to the ground. I went to the inner cage followed closely by them. Okii at once picked up a long rootlet and carried it to the nest, talking. Other material offered to him there was accepted promptly and placed.

When I came out of the cage and looked for Rhody, he quickly appeared and showed that he wanted a mouse. Again the procession to the mouse place followed, and again no ritual. Based on behavior of the last week or so, this is early for him to want a mouse.

10 A.M. At 9:45 Rhody was doing nothing near the cage, but just outside the fence to the north. I talked to him and suggested that he come over, although I knew he was not hungry. Yet he did come and brought a bill full of pine needles which he presented at a window of the upper annex of the cage, then carried about on the roof looking for a place to put his burden. This was found in a sagging portion of the awning. For a few moments he stood looking down at the needles contemplatively, then composed himself to rest.

This looks like another instance of my being woven into the reproductive pattern of a bird; but in this case, a road-runner instead of thrashers.

(In this connection see "The Companion in the Bird's World", The Auk, July 1937, by Konrad Lorenz, kindly lent me by Dr. Grinnell, who called it to my attention as possibly having some bearing upon these observations. I can understand perhaps 5% of this article at present, but think I can dimly see some sort of a hook-up between Lorenz's "Kumpan" doctrine and the things these birds have been doing in my presence).

August 13th. to 15th., incl.

During this period Rhody showed no departure from seasonal form, except, perhaps, that he absented himself (was not seen) on the 15th until about 5 P.M., at which time all that he wanted was a good, long drink.

Rhody chooses mouse instead of snake.

The day before he was offered the small gopher snake, but refused to get excited over it. I judge that, although he was ready to accept suitable food at the time, the snake was larger than necessary to fill the bill. He would look at it, but each of the two times that I left him and went to the shop yard in order to put him to the test, he followed, waited in expectation of receivig a mouse, and when it was not forthcoming, followed me back to the snake. He was finally given his choice between the two animals and took the mouse without hesitation. As on all other occasions during this period, there was no ritual.

It should be said that about 3 hours earlier he had had a liberal helping of meat, so that he probably was only moderately hungry.

Okii and Chiisai continued sporadic nesting activities, but uncoordinated. Their "nest" is "getting no further forward fast". Practically all of the material falls to the ground sooner or later

On the 14th. Chiisai excelled all former efforts in digging- and quarter- song, of high quality and well sustained over a period of many minutes at a time.

During one of these song intervals Okii lay down to doze on the back of a hand held close to my chin and sang his "slumber song" there for fully 15 minutes. I could catch every nuance, but it is impossible to describe the song adequately.

About 6 P.M. on the 15th. Okii and Chiisai were banded by Donald Brock: Okii first. He did not like it at all, and for an hour afterwards, had no use for me,

but, although still uncertain of me at the end of that time, was willing to accept worms offered. He repeatedly tried to remove the band and these efforts caused him to fall from his perch several times.

Chiisai, immediately following Okii (or as soon as he could be caught--for he was suspicious) was banded. Okii had unsuspectingly come to hand for worms and was there captured by Donald. Chiisai, after witnessing this and Okii's following excitement, could not be induced to come to me and had to be cornered in the entry. He was somewhat more philosophical about the affair, after being banded, than Okii, although he also made efforts to remove his band.

August 16th.

About 8:30 A.M. Chiisai showed a little hesitation in meeting me in the entry, stopping just beyond the inner door and scrutinizing me tentatively. Soon, however, he flew up to me. Okii soon followed. Both were still somewhat annoyed by the bands, occasionally pulled at them, showed a tendency to limp and to put the banded leg up under the breast feathers. Except perhaps for Chiisai's hesitation (which may have had no significance) the attitude of both birds toward me appeared to have become normal. (It was not I who handled them and banded them).

Okii was banded on the right leg and Chiisai on the left. (Note the mnemonic: Okii, O.K., right). U.S. Biological Survey bands were used as follows:

Okii, on right leg: No. 36-405371.
Chiisai, left " 36-405372.

(If the bands annoy them too much they will be removed).

Earlier in the morning than 8:30, according to Julio, both thrashers were working at the nest.

About noon Chiisai discovered an attractive root in the compost heap, began to talk and carried it promptly and directly to the nest, with accompanying talk, placed it carefully and then went through the action of shaping the interior with his body. All of this without suggestion from me. I now went to him and he received and placed material handed him, only to desist in a few moments.

Meanwhile Rhody had come for his meat and seemed inclined toward "domesticity" for the rest of the day.

Rhody advances learning ?.

in 2:30. P.M. I was in the cage with O and C; Rhody resting in the shade nearby. Suddenly he mounted to the roof of the cage, ran across it over my head, dropped to the ground, passed his meat dish without a glance at it and ran swiftly in the general direction of the shop-yard, although on account of trees and the winding route I could not see where he really went. He did not look back at me once. I suspected, however, that I would find him waiting in the yard for a mouse, but waited several minutes before going to find out, in order that he might have time to determine his his further action without being influenced by any move whatever on my part. When I got there, there he was, sitting quietly on a carpenters' horse near the mouse cage, waiting, and as it seemed to me, for my arrival to complete the pattern, which, of course, I did. No ritual.

(It will be remembered that he had no mouse yesterday). This is the first time that Rhody has been seen to run at high speed to the mousery and, at the same time, the first instance of his having been seen to lead the way there, in effect, without pausing to observe if he were being followed.+ That is: to assure himself that the contemplated programme would be carried out.

The suggestion here then, is that he has advanced another stage in learning to such effect that, in this instance at least, he unhesitatingly omitted still another element as being non-essential in his going-to-the-mousery pattern. The real explanation, of course, may be something entirely different.

+ This last part not quite [illegible]

August 17th.

No changes of consequence were noted in the behavior of any of the birds under observation.

Rhody's Roosting Time and Place checked up.

About 5:15 P.M. Rhody started for his night roost, and I decided to check up on him, as this has not been done for a long time. He followed his usual route, including his regular deviation from the shortest line to look at the cars in front of the Scamell house. He reached the ladder tree at 5:28 and, at 5:34½ precisely, jumped across to the roost tree and went at once into his house, lying down immediately. (Clear, warm, calm; Sunset 7:01). He does like this house. From the street below (I have not climbed the tree for a closer inspection) his addition to the structure (his house-nest) appears neat andcompact. It forms a sort of low parapet around the floor, over which his head can be just seen.

Effect of Banding Upon Okii and Chiisai.

These birds have now been banded for about 48 hours. (7:30 P.M) The effect, to date, upon them is striking.

In the first place it has entirely changed their usual gate in walking or running. In walking-now-the banded foot is raised higher than the other one and more rapidly, and both hops and jumps have been introduced to an extent not usually seen in thrasers. (By hop I mean taking off on one foot and landing on the same foot By jump I mean taking off on both feet and landing on either one or both feet. Popularly, a bird is said to hop when it is in reality jumping).

In running the same effect is noted and also a tendency to veer off the course. Curiously, the effect upon the observer is such as is apt to lead him astray, in that he may attribute the action observed either to the birds' being partly crippled (which in effect is really the case) or to exuberance of spirits (which is almost exactly what it isn't).

These effects are not surprising, except as to magnitude. The unequal distribution of weights throws the birds out of both static and dynamic equilibrium. Although the weight of a band is small as compared to the weight of the bird, it must be fairly large as compared with the weight of the foot. It is well know that some defects in the action of a horse may be corrected by placing relatively trivial weights at the proper places on his feet.

An effect has been noted, however, that is surprising , and that is that the birds now are inclined to depart from the standard thrasher practice of going from place to place on foot, and fly instead. So pronounced is this tendency that they (especially Chiisai) may fly between two points on the ground that are not more than 3 or 4 feet apart.

There are still other effects. They are now less certain of making either good take-offs or landings from or to perches--they have become awkward and have incipient falls. The weighted leg appears to lag in starting and arriving without the bird's being aware of it.

The weighted leg is favored in perching, being lifted up and placed beneath the feathers. Even this placing is interfered with on account of the unaccustomed bulk of the band. Again: the bird appears to tire sooner in holding this leg up and become restless.

While they do not now peck at the bands very often, they appear aware of them in every move they make. In short, they act like the slightly crippled birds that they are. Some of this will, no doubt, be overcome; but there is little doubt in my mind that, no matter how long the bands are allowed to remain, the pedestrian activities of these birds, as long as the bands are in place, will be definitely impaired and unthrasherlike, and that apart from any considerations of actual physical injury.

1st

August 18th. to 20th., incl.

During this period "pressure of other affairs" prevented my giving close attention to the birds.

However, during these days, Okii and Terry failed to become reconciled to the handicap of the bands and, although it may have been due to excess of imagination, it seemed that they sought the seclusion of their retreat in the upper portion of the inner cage more, and were somewhat more shy of man. In fact Julio complained that they had now formed the habit of running away on his approach. Examination of their banded legs fails to show any surface damage, but it is noted that the tarsus of each banded leg appears to be polished as compared with the other.

Moult of Okii and Chiisai.

Chapman, in his book Bird Life (1914) makes the statement: "At the close of the nesting season all (the italics are his) birds renew their entire plumage by molting." "All" necessarily includes birds of the year as well, perhaps unintentionally. In this connection it is to be noted that, as yet, the moult of Okii and Chiisai appears to have been confined to the "soft" feathers, the rectrices and the wing coverts. Here, again, it is to be noted that I have heard it asserted that young birds, in their first moult, shed only their "soft" or body feathers.

It is quite evident that Chiisai, the more juvenile in appearance and behavior--in most respects--of the two birds is further advanced in the moult than Okii.

Both still retain vestiges of the natal down (?) on the back of their heads.

Song.

Chiisai has been heard in one or two short snatches of approximate full song. His digging song is now in no way inferior to Okii's, and when he has stopped digging, he is apt to continue the song from a perch.

Rhody shows seasonal form.

Rhody appears to have forgotten all about building nests; no longer displays on receiving a mouse; does not tail-wag sidewise; does not carry it about and does not present it at the mirror. He does, however, occasionally look at himself in the mirror, but without vestige of excitement. All this appears true to seasonal form.

New Evidence (?) bearing upon the Road-runner fence-building story.

I suppose everybody who has ever heard of the road-runner knows the apocryphal story of its building a thorny fence about sleeping rattle snakes, in some one of its versions. This is one of the "tall" stories of the south western United States. The version that corresponds most nearly with my childhood recollection of it is that quoted in Bryant's "Habits and Food of the Roadrunner in California" (University of California Press, 1916). I have an indistinct memory of having seen it in one of my early school books. I do not know personally anybody that really believes it to be true. Bryant refers to it as a myth; which has always been my attitude since I learned that the printed word was not infallible.

Curiously, only last week, I saw a habitat group in the Snow Museum in Oakland, for the first time, showing two roadrunners and a rattlesnake in desert surroundings faithfully acting out this story: cactus corral and all. And "comes now" Mrs. May Patterson, who kindly hands me her copy of "Flowers and Gardens" for July 1937, published at Calcium, N.Y. by one Madison Cooper. On page 224 of this publication there is an article signed by May Lumpkin Prewitt describing in circumstantial detail the beginning and the end of such an episode witnessed by her somewhere in Texas--place not stated. She sees the sleeping snake; the road-runner discovering it; the beginning of the corral of mesquite; watches for 15 minutes, but has to leave for two hours. On returning at the end of that interval, she finds the dead snake within a barricade, pierced by a thorny limb and with head and back badly lacerated. (I will call to attention of M.V.Z. and suggest follow-up).

On the afternoon of the 21st. Okii again, while lying comfortably upon a hand held close to my chin , treated me to a long and varied slumber song. I began to catch some of the phrases, one of which approximated the upward run of Brownie's "Purple, one, two three" call. Toward the end of it a sharp jar on my front teeth announced that Okii had suddenly thrust his bill between my closed lips: a trick that I have to look out for, as I do not fancy second hand centipede and yellow-jacket juice. Incidentally, one of the latter insects buzzed about with an Argentine ant clinging to one foot.

Rhody was again given an opportunity to claim the small gopher snake before the camera. He was interested enough to follow and watch intently while I took the snake from the box, but would have none of it and kept an eye peeled to detect any signs of my moving toward the shop-yard. In fact, intentionally or accidentally, placed himself where he could watch the gate. I finally gave up, let the snake go for good and all, and was promptly tagged by the bird. No display. ("Watching the gate" merely consisted in hanging about near it).

Rhody appeared to have forsaken his "optimum" acacia during the day time. For the last few days, I find, he has adopted the branches of an acacia melanoxylon against the east wall of the cage. From his perch there he can look into the upper window of the annex and can step on to the roof with little effort, there to restore his thermal equilibrium. This tree is covered with tan colored seed pods and Rhody's tawny and green coloration blends into it perfectly. One can look directly at him without seeing him. If he happens to be there and one looks in the right spot long enough and fixedly, it is possible to witness a reversal of the Cheshire Cat fading process! (This ribbon is acquiring the

the same accomplishment).

On the 21st., for the first time since they were banded, Okii and Chiisai seemed to have recovered fully their attitude toward life in general, although still showing impaired physical activity.

Their nesting instinct continued to manifest itself, but without accomplishing anything of permanent character at the nest itself. However, I find that there is a tendency for nest material to accumulate on the ground below the nest

During this period, Chiisai, who has consistently been the "baby" of the pair, first began to refuse food offered by means of the medicine dropper, by turning his head away each time I was about to squeeze the bulb, although he had "asked" for it with open bill. Sometimes I have squeezed the bulb and missed his open mouth. He has then picked up the food and eaten it. Okii went through this phase long ago and for weeks has refused to be hand fed. Curiously enough, however, Okii, for a week or two now, has reverted to infantile behavior to the extent that he has resumed the immature yip (or kip) when hungry.

For the first time, also, he was seen to take positive notice of the magpies on his own initiative and, again curiously, this took the form of what appeared to be a request for food.

As to physical condition: except that Okii is still the larger and muscularly the stronger bird, there seems little difference. The difference in strength was noted by Donald Brock when he banded them and I could easily see that he had more difficulty with O. This difference does not deter Chiisai from repelling successfully any of Okii's real or fancied encroachments , and he is just as likely to infringe upon O's rights as the reverse. There is, as yet, no apparent effort on the part of either bird to domineer.

August 22nd.

About 9 A.M. Rhody was found in his melanoxylon.

Earlier the young thrashers were scripping loudly at a flock of quail at the cage. They stopped when the quail left. Thus scripping for Rhody's benefit does not necessarily indicate inherited fear of roadrunners per se.

Again, this scrip is not always an alarm note of these birds. They sometimes use it on seeing me approach and in coming to meet me. There are instances recorded in these notes when Brownie used it in response to my call and continued it while approaching me even from a distance and even while sitting on my hand after arriving. It does, I believe, indicate as a rule, excitement of one kind or another.

Moult again.

For several days O and C have shown increasingly conspicuous bright tawny strips in their breast plumage: two on each bird at the side of their breasts. They are much lighter than the surrounding old feathers and more colorful.

Surviving juvenal characteristic.

Both birds, on being offered food by hand are still apt to "drop a curtsy" and flutter their wings momentarily--Chiisai far more so than Okii; but both may shorten the action to a mere quick lifting of the wings and immediate replacement. Okii may omit the ceremony entirely, but Chiisai rarely. The latter may repeat it for each of a dozen or more worms offered one at a

time

Eye color. The difference in color of the irides seems to be increasing: Okii still approaching Brownie's bright "orange brown" and Chiisai seeming to have arrived at Greenie's colder and more olivaceous hue: first described in these notes as probably being obtainable by putting a little green pigment in B's color.

Sexual dichroism? It will be recalled that Greenie, to the last, although a mature bird with family, showed no signs of acquiring Brownie's same eye coloration. On the other hand, I believe (without looking up back notes) that I was satisfied that Nova had it. Still this may have been a case of malobservation and it is not impossible that dichroism of irides as between the sexes does exist in California thrashers. Or it may be that the female is later in reaching this stage than the male. Or there may be individual variation without regard to sex.

3:00 P.M. Rhody has continued to occupy his acacia melanoxylon post almost continuously since 9 A.M. except for two or three short absences and departures to get meat or to restore thermal equilibrium on the roof. (Time is approximate).

4:10 P.M. He is still (or again) there.
5:20 " (Approx.) He comes down, follows me for mouse, but considers the one offered too large, and I have none smaller. He accepts situation philosophically and departs.

There seems to be nothing for him to do now but rest, preen and eat until some time next year.

August 23 rd. (Typewriter repaired, new ribbon, degree sign (°) and exclamation point (!) added).

Rhody was absent most of the day.

Okii and Chiisai as usual, with perhaps increased frequency of digging song by both.

August 24th.

Rhody came for meat at the cage about 9:30 A.m., but as he was about to reach for it, I started for the shop. He at once changed his mind, appearing to divine my intention instantly and preceded me , running back and forth across my path just ahead of me in his eagerness,as if urging me to hurry. There was no ceremony about this mouse: one of a new batch just acquired and considerably smaller than he has been getting during the last month.

He now retired a half dozen yards to one of his favorite perches, which I do not at the moment recall having mentioned as such in these notes: A horizontal branch of an oak by the south wall of the tool-house, not more than 5 or 6 feet above the ground amongst the rhododendrons. He likes this place, especially when he has been given a mouse not long before the time comes for him to seek his night roost. He stayed there resting and preening for perhaps an hour.

Some time about noon he got his meat at the cage.

About 2:30 Rhody, now sunning on the roof of the cage, was shown a blue-bellied lizard. He came down and played with it for 15 or 20 minutes without injuring it. His basic plan seemed to be to make it run so that he could have the fun of catching it again. Altogether, I should say, he picked it up and dropped it at least

30 or 40 times, usually taking it by a rear foot (a sign, usualy that he has no immediate intention of eating it, otherwise he would seize it by the back of the neck).

The lizard made only 3 or 4 attempts to escape; none while the bird was holding him, which is the usual thing.

Rhody finally tired of the sport and left him , to return to the roof. I picked the lizard up and examined him carefully. There was not a mark of any kind on him. Like many of the lizards here it was sprouting a new tail.

I now took it into the cage. (Okii and Chiisai had been watching the performance with mild interest). Okii flew up to my lap at once, but jumped down, startled on seeing the lizard there, and walked around me a few seconds: stiff-leggedly, as Brownie used to do when Rhody was too near. In a few seconds he was up again and struck the lizard a resounding blow on the back of the head; at which it merely flinched slightly without trying to escape. Okii now picked it up by a hind leg and ran off with it, but when he laid it down the lizard was off like a shot into the bushes in the cage. Okii and Chiisai made a half-hearted search there, but came out with nothing.

Rhody, in turn, was keeping himself posted on events, and when I came out of the cage and headed for the shop-yard, he shot along the roof in pursuit, using both wings and feet, sailed down and made it practically a dead heat at the mouse cage. No ceremony, but retirement to the same oak branch for a long stay.

The interesting feature of his today's behavior is his twice passing up food of which he is fond, at or in his bill, for mice. In one case: meat which he was reaching for; in the other: a lizard,already in his bill. Heretofore(I think I am justified in saying) of all the foods offered him in the past, his response to lizards has been the most prompt. Even in this instance it was prompt; but it was not eaten. This suggests that the element of sport in connection with the lizard is one of the main attractions that that reptile has for him.

(It should be noted here that only about 15 minutes elapsed between his deserting the lizard and following enthusiatically for the mouse).

It will also be observed that, in the meat episode, he passed up a certainty of immediate food and risked being in error in "relying" upon me not to deviate from that pattern of mine which he has deciphered. (Never mind the anthropomorphism!).

The case of the mouse is not so clear: The sporting instinct may have entered here. Further: Having watched the affair in the cage, he may have been aware that the lizard was no longer available, hence was in a receptive mood towards mice.

Okii and Chiisai, though still with impaired gait, seemed less annoyed and hindered by the bands.

Both sang digging songs often and of long duration. In this performance Chiisai was, today, the more conspicuous and the quality of his song was not inferior to Okii's. In fact I got the opposite impression. Chiisai also sang slumber song equal to O's.

Nesting. Of the "nest", now, all that remains is the original framework placed there by me. However, both still show interest in suitable material, carrying it about and talking.

There is now an entire absence of song by other thrashers in

this vicinity--I should say:full song. Occasional under- or digging song is heard from visiting birds.

Broken-wing is seen less frequently, but other thrashers appear occasionally.

August 25th.

Increasing tension between O and C?

About 9:30 A.M. there appeared to be a slight tension between O and C, shown mostly by C becoming "taught" on O's near approach, with a tendency for him to seize O by the bill resulting either in retaliation or retreat by the latter usually. There was some posturing by C of obscure import, and while both were on the same perch at one time, C uttered some clear, flute-like notes rythmically and differing in pitch.

Nesting.

About 10:30 Okii was much interested in roots found in the compost heap. Chiisai was in the inner cage "fluting". When I went in he flew to the nest and began to talk volubly. He took and placed twigs offered. Okii came in to dig under my feet. Nothing of significance (to me) was noted after the first minute or so, both birds going up into the upper story to hop about from place to place with no clear purpose evident. I came in to make this entry.

At 11:15, when the thrashers saw me coming, they flew from the inner cage to me, Chiisai a few seconds in the lead. He cocked his tail vertically when O landed beside him, approaching O at the same time. Nothing of consequence followed and they both fell to digging.

Rhody ran true to seasonal form during the day: No display on being given a mouse; no nesting : no song.

August 26th.to 29th., incl.

During this period there was little nesting behavior on the part of O and C and nothing that might point to significant interest in each other beyond that already recorded. There were occasional passages of arms between them of short duration. One of them occurred when Okii, sitting on my folded arms, attacked Chiisai when Chiisai flew up to enjoy the same privilege. A smart interchange of blows to the head and beak followed, each bird seeming to direct his strategy toward seizure of the other's bill. As is usual in such cases when I interfere by interposing a hand or finger, I was rewarded by a good hard pinch from Okii and an attempt to thrust my hand aside. This, again as usual, ended the affair.

Okii's early promise of precocious full-song has not been fulfilled--the few instances of full song from him recorded here being about the only ones. Both birds, however, continue their digging songs regularly and at times carry them on for a short period after digging ceases.

Rhody behaved about as usual, but with one slight departure from normal which indicated both his attitude toward strangers and the strength of the mouse-shopyard association which he has formed. On the 29th. four of us (incl. P.S.A. and family) sat by the cage. Rhody appeared on top of the roof, keeping pretty well out of sight, but peeringover the edge occasionally.

After a few minutes he accepted my invitation to follow to the shop-yard for a mouse. As I wished to show the visitors how he eats these creatures, I did not give it to him there, but walked

+ But so have the adults stopped singing

back with it to the cage, followed by him until he caught sight of the group sitting there, when he retreated. As he did not reappear, I went back to look for him and found him, as expected, back in the shop-yard, patiently waiting by the mouse cage, looking up at it.

He came out obediently when called and I returned by another route, followed by him. By this route he would not have to approach the group from the front, but come up from the rear. This he did, but was careful to make a detour around them through the bushes, taking the mouse with considerable reluctance from about 15 feet in front of them and retreating quickly.

Rather unexpectedly, in about a half hour, he followed Julio to the yard for a second mouse, which he also ate. Still later he returned to his sunning place by the loquat, but being careful to keep as much out of sight as possible while going there.

August 30th.

Rhody's moult. About 9:30 A.M. Rhody approached the cage and I le~~a~~d him to the yard for his first mouse of the day. One of his tail feathers was dragging with tip on the ground, but fell out as I watched.

This feather, it happens, is the left-side mate of the first tail feather shed this year, found by me May 12th. They are mirror images of each other. Thus it would appear that the moult of Rhody's rectrices has already covered a period of 3½ months, and since it required about two months for him to replace completely the seven tail feathers lost by him through accident on October 26th. 1936, it would seem that at least 7½ months will be required for his tail moult to be completed--perhaps longer, as I am not sure that ~~t~~his rectrices have all been shed as yet. There are still several that have not yet reached their full growth.

"Hunger Marks" These two feathers were carefully examined for "hunger marks" without finding any. They were also examined for "water marks" (assuming that I understood Dr. Grinnell's description of these verbally on the 23rd inst. and can identify them).

I counted 60 on each, plus or minus 2 or 3, allowing a margin for possible error. (Note how this number fits in with the number of days taken in completely replacing the lost feathers of October 1936).

What I took to be "water marks" were transverse bands across the vane~~s~~ *and* the rhachis *and* the calamus. On the vanes they appear as rose-purple bands, when the feather is held at a certain angle, in sharp contrast to the blue-green background; this being an optical effect probably due to the fact that the bands occupy slight depressions across the vanes and the light from them (that enters the eye) has been reflected at an angle differing from that at which the light from the rest of the feather (that enters the eye) has been reflected. It appears to be a diffraction and interference effect. On the rhachis the mark~~d~~s appear as shallow grooves; on the calamus as whitish bands. The figure 60 represents the sum of the bands on the vane plus those on the calamus beyond where the vane ends.

These marks are not what I have called "hunger marks" after Pycraft (Encyc. Brit., 11th. Ed., Art. FEATHER).

Pycraft says:" The growth of the feathers is, however, certainly affected by the general health of the bird, mal-nutrition causing the appearance of peculiar transverse V-shaped grooves, at more or less regular intervals, along the whole length of the feather. These are known as "hunger-marks", a name given by falconers, to whom this defect was well known". They are not at all like the "water marks" in appearance nor do they appear in the *old*, *worn*

feathers of the free, well nourished road-runner, Rhody. But they do appear in the tail feathers of the confined thrashers Okii and Chiisai: on their first tail feathers even before they were fully grown at a time when they were being hand fed and therefore, because of the artificial character of the food and perhaps also because of the absence of their parents' saliva in that food, were probably improperly nourished. (Fully grown, above, refers to the feathers primarily, although the birds also were, of course, not full-grown).

Further, these young thrashers, now broken in to artificial food and apparently well and vigorous, are now getting their second sets of tail feathers. Hunger-marks on these new feathers are few.

Again, Archie and Terry, taken from the nest and hand reared showed many hunger marks on their first tail feathers, but there were few on their second while still in captivity.

These hunger-marks, as I see them, are narrow grooves, probably V-shaped as Pycraft says, and in them there is apparently an absence of continuity of the barbs; the barbs appear as if broken or much thinned. (I have not examined them with a good glass). The light shines through the vane at these marks, and the vane may break along them. They do not necessarily appear in worn feathers, as shown above. I did not find them in Brownie's, although I observed many of his moults. He was a free, well-nourished bird. Examination of the road-runner skins in the M.V.Z., I believe, will disclose that the majority of the tail feathers,by far, do not have them.

They do, however, appear in the sprouting, first, rectrices of fledglings taken from the nest and reared by hand; perfectly fresh, uninjured feathers. They appear to be formed during the process of growth and not as the result of injury from extraneous causes. Nor, based on my own limited experience alone, does it appear that, what I call a hunger-mark, results from wear on a water-mark. However, I can see that, where there is defective nutrition, a hunger-mark may be but an exaggerated water-mark , or more properly: the effect of the same cause that accounts for water-marks, but a cause that, so to speak, has gone out of control. All this, however, while the feather is growing--not after it has ceased to grow and has been subjected to wear.

Now, if I understand Grinnell correctly, the things he calls water-marks are the result of discontinuous growth of the feather: there are alternating periods of rapid and slow growth. These leave marks on the feathers. (Somewhat analogous to the rings of trees, though he did not say so). Now does it not seem reasonable that, if the bird is suffering from mal-nutrition, growthduring the "slow" period may of such defective character as to leave actual physical, visible lines of weakness in the feather structure? That is, hunger-marks.

(No doubt this is all covered in the literature, of which I have read none, except the one article above referred to, which merely mentions the matter).

~~The completeness of this ignorance therefore enables me to suggest an explanation of the water-marks theoretically opposed to the ones based on intermittent growth of the feathers~~

(At this point in writing the above I went out to have a close look at the two young thrashers, Okii and Chiisai. I found that, on the original rectrices, Chiisai showed but few hunger marks, whereas Okii showed a great many. Now this is curious; for these notes show that, for several weeks, ~~of Chiisai's growing to maturity~~ I had doubts of Chiisai's reaching maturity, because of his being, what aviculturists call, a "soft bird": a weakling as

compared with Okii, with green droppings. On this account he was given special food and attention for weeks and, up to about a week ago, he still demanded to be hand fed, whereas Okii, many weeks ago refused, once and for all, to be hand fed with the dropper. Chiisai, I thought, was suffering from mal-nutrition due to "inflammation of the bowels". If this were true, he should be the one, according to the hunger-mark theory, to show the transverse grooves in numbers, and not O. On the otherhand, however, because of the special attention he received, and because of Okii's early decision to seek his own food, it may well be that the latter was really the undernourished bird: hence his more numerous hunger marks. You pays your money and you takes your choice!)

To go back to the feathers: Before I ever noticed these/ so called hunger marks, I had often observed on both young and moulting birds(Brownie and his numerous progeny and others) that sometimes the sheath on a sprouting feather occasionally persisted even after it had become detached from the body and sometimes formed a constricting ring around the vane and I wondered (without following the matter up) if this would not cause a defect in the feather at that point--and I am still wondering and still doing nothing about it.

The 60 day (approx.) renewal period and the 60 (approx.) water-mark observation above referred to may be only a coincidence, but it does seem to dovetail in with the (I suppose definitely established) fact of intermittent growth on a 24 hour-cycle basis.

As a harmless speculation, however, let us postulate an absolutely uniform rate of growth of a rectrix and a tendency for that portion of the growing feather,which has not yet emerged from the sheath , to adhere to the sheath. As an observed fact, the sheath does constrict the vane and, at least occasionally, does stick to it persistently. The uniformly growing feather will stretch the sheath until the latter either breaks or lets go; that is, the sheath alternately constrains and releases the feather. During the constricting period mechanical injury to the feather occurs, thus causing water-marks, or, in case of malnutrition: hunger-marks.

In the face of known discontinuous growth, however, this seems rather pointless; although it does seem probable that there is some mechanical effect to be reckoned with. Also, the bird works on these sheathes only in the daytime, presumably, thus introducing another mechanical effect on a twenty-four hour cyclic basis.

This removal of sheathes with the bill from all places accessible to that instrument is especially characteristic of Rhody, the road-runner. During the moulting season, which with him is not less than 6 months, he is believed to spend hours per day working on his feathers. He treats each one separately, removing the sheath in the process.

August 31st.

Nothing out of the usual run of events on this day.

September 1st and 2nd.

During this period Rhody demonstrated his ability to absorb mice at shorter intervals than he has been receiving them of late. Thus, on both days, he "asked for" a second mouse less than half an hour after eating the first one.

R's roosting time. On the 2nd his roosting time was observed again. At exactly 5:14 P.M. he entered his house in the roost tree. (Sunset 6:39).

R's moult.

Rhody is still losing soft feathers when he preens.

Sept. 3rd.

Chiisai sings quarter song.

The principal development of the day up until now (11:30 A.M.) has been Chiisai's fine quarter-song, sung while sitting on a limb, not sleepy and not, of course, digging. This is a performance not yet heard from Okii; but the latter has sung a few bars of full-song; though rarely.

Rhody has one of his circuses

Rhody ran true to seasonal form during the day, and on one occasion pulled off an elaborate circus around the cage and through the bushes. Whom it was intended to impress I do not know, although twice he came and stood in front of me for a few moments as if to observe my reactions. He was not hungry, as he had just been given a mouse and refused to be interested in a second when put to the test.

Okii lame.

Okii has gone lame in one foot; not the banded one. This happened frequently with Brownie. No sign of external injury is to be seen.

Sept.4th.

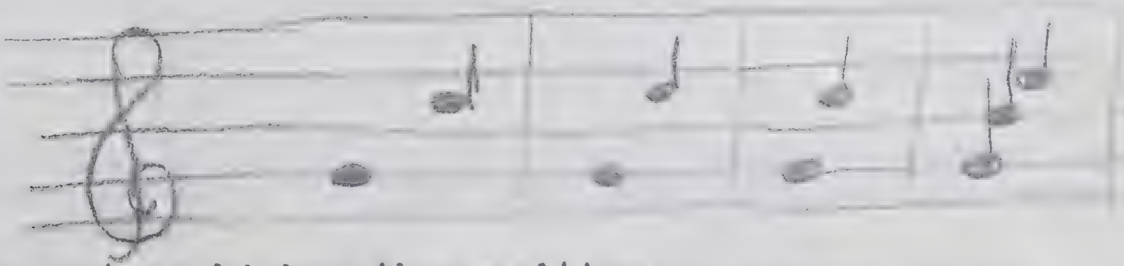
Chiisai again is the the singer.

Nest reaction.

About 10 A.M. I heard a fine, low, continuous song from the thrasher cage while I was about 25 yards away. It proved to be Chiisai again. He stopped when I arrived at the cage, picked up a long slender root, tried two places in the outer cage, then carried it to the "regular" nesting place, where there is still no material progress to be seen.

About 11 A.M. Rhody, taking meat from the dish, would not drop it and follow me for a mouse.
A little later he produced another one of his circuses.

At 2:45 I approached the cage and, at about 100 feet distance, I could hear the phrase:



Sung an octave higher than written.
(This is the way it sounded to me, but I positively do not guarantee either the pitch of the notes or the technical correctness of the transcription!).

This proved to be from Chiisai, sitting on the back of a chair, and was only the loudest phrase of a continuous song, as I discovered on nearer approach. Okii was singing digging-song in the inner cage. C, on seeing me, ran to the wire and began to yip like a baby bird, adding his little tsee poo, which often accompanies the yip. (It is curious that both birds should still use this yip when requiring attention from me. To the best of my recollection none of the other youngsters used this after the first week or so from the nest, and Brownie never used it).

The tsee poo (although that is not an accurate description of the sound) consists of two notes an octave apart(?) the first being the higher at about two octaves above middle C.

I did not respond to C's yipping and remained outside the cage. C now picked up a twig about one foot long, began to talk volubly as he carried it up into a corner where there was no place where it would remain. I then entered the cage, picked up the twig and, followed by C, entered the inner cage. C was finished with his twig, so I offered it to Okii, who was on a shelf under the nest looking very "wooden". Instead of taking it, he bit me ungraciously and jumped up to the nest. I offered it to him there and he flew away with it to the hanging sleeping-place made for the young road-runners. There he placed it carefully, talking, but wanted no more. Chiisai was now digging under my feet and was soon joined by Okii . Whenever I shifted a foot, they then went there to dig.

A shadow at my feet now puzzled me until I looked up and saw Rhody on the roof . He proved in receptive mood and followed to the yard for his mouse, the young thrashers following me to the door of the cage as I left--presumably to dig under the soles of my shoes again if I should stop. This is a typical action of theirs.

In slightly less than an hour later Rhody followed me to the yard for another mouse.

September 5th and 6th.

During this period the young thrashers' song was heard only while digging; both birds being about equal participants, although Okii perhaps sang a little more than C.

Chiisai was heard to vary the musical phrase of the 4th by inverting the order of the introductory notes, singing them as cg,cg,cg instead of gc, gc, gc.

As noted in the case of Brownie when most of the contour feathers had been replaced, the birds are now lighter in hue and heads and backs more of the tone of a mourning dove.

Their ear coverts are now moulting and the ear holes are conspicuous.

The "mane" has disappeared from both and the backs of their necks are almost bare.

They still have several of the old feathers left in their tails.

I see no signs of moulting of flight feathers, but at least one row of wing coverts has been entirely replaced (or perhaps added?).

Their irides show a constant difference in hue still.

There is now no conspicuous difference in size between the two birds. To detect any both birds have to be viewed at the same distance and the same pose and quite still--not an easy set of conditions to bring about.

On the 6th Chiisai showed marked renewal of the nesting complex but accomplished nothing. Okii was less active in this respect.

Rhody is still actively shedding contour feathers, but never seems to get shabby, i.e. very shabby.

He seems satisfied with two mice a day and wanders little at present, much of his time being spent on or near the cage or on his favored oak branch. The "optimum" acacia is neglected, but the one at the cage is still in use.

Okii and Chiisai do not always scrip on seeing him now.

O and C have developed a new trait, now that the jays are coming back, of scolding those birds with a long-drawn-out sound impossible to describe, but somewhat like Brownie's h-a-a-a-i-h ! Curiously, they seem to be entirely dispassionate about it (if it is possible to scold without passion) and, whatever their feelings in the circumstances may be, they do not appear to apply to me also; for they will sit on me and scold.

Both appear to respond to the alarm notes of any bird and instantly stop whatever they may be doing at the time and listen intently.

Rhody saw, on the 6th , what was probably his first Eastern grey squirrel. (It was my first at this place). He watched it keenly as it ran about from place to place and up trees, crouching low and even halting his march to the mousery on first seeing it. When it finally disappeared to the north, R followed to the fence and "pointed" for several minutes, but I could see nothing.

R's roosting time.

To check up on Rhody I went to his roost tree, but he was already stowed away in his bunk at 5:04 with the sun shining upon him fully. (Sunset 6:33, temp. about 70°). (I had to give the temperature so that I could try out my new ° sign.). It is to be observed that he is beginning to go to roost earlier now that the days are growing shorter; but it should be borne in mind that this does not also mean colder, because September is normally the month having- though by a small margin--the highest mean temperature, in this vicinity, due, presumably, to the fading out of the prevailing summer winds from the ocean.

September 7th.

So far this month has not been living up to its established norm and we have been having considerable dull weather.

Persistent sheath on one of C's tail feathers.

Chisai now has one of those tail feathers where the sheath is persistent (Aug.30th. notes). The barbs that have not completely erupted from it are gathered in brush-like form beneath the rhachis--something I have wondered about--as it would seem to have bearing upon the angle that the "water-marks" and the "hunger-marks" make with the vane in the perfect feather. From a mechanical view-point there is concordance of the angles of these marks.

R's roosting time.

I went to R's roost tree at 4:45 P.M., thinking that that would be early enough to anticipate his arrival. However, he was already disposed in the house. (Sunset 6:31; temp.60°). Cloudy.

Sept. 8th.

R, out of sight, comes on call.

He "protests".

At 10:15 A.M. I heard spotted towhees scolding in the thick brush of the west lot. I went to the fence and called Rhody, suspecting his presence there. He soon came out, flew over the fence and followed to the mousery, stopping once to rattle-boo in protest (at my leading him so far without"loosening up"?).

Rhody "answers".

About 1:30 he was outside the fence to the north. I Booed at him once and he immediately returned the compliment with one rattle-boo. On being invited to come over the fence, he accepted and took a piece of meat gently from hand. He wanted nothing more from me during the rest of the day and, when I had seen nothing of him for about an hour, I went to his roost tree. He was already in his house at 4:25 P.M. Again I was too late to time his retirement

despite the fact that I was on the scene twenty minutes earlier than yesterday. It was bright and warm, unlike yesterday. (Sunset 6:30). The sun is coming south rapidly.

The persistent sheath on Chiisai's rectrix is now splitting down the sides releasing the barbs. This feather, instead of lying flat against its mates, is rotated about its principal axis through an angle of about 45°. He has not been seen to work on the sheath.

On the 6th and 7th. Chiisai could hardly resist picking up any suitable nesting material he encountered and carrying it up to high points (including my hand) and there dropping it aimlessly. Today he was less active in this respect. He has usually been the more active nester of the two (and still is).

The musical performances of both birds today were confined to digging songs. (5 P.M.).

Sept. 9th.

Okii and Chiisai scrip at the quail.

About 9 A.M. the young thrashers were scripping, but as usual, appeared quite calm and apparently looking at nothing as I approached the cage cautiously. I found the the quail were dusting near the cage in full view of the thrashers. (One of them had a hole so deep that his back was about on a level with the surrounding earth). The quail were undoubtedly the cause of the comment.

Both youngsters fell to digging, with appropriate song, before the quail had entirely dispersed. When I entered the cage both were up on me in a second looking for the worm box (which was in my pocket) lifting my necktie aside and probing all possibilities.

Chiisai discovered a freshly skinned place on one of my hands and, before I could stop him, had the blood flowing again, swallowing the scar tissue.

An hour or so later, when I went into the entry, both birds left off "dig-singing" and each flew up into an upper corner of the entry and clung to the wire there, as if waiting for me to hold a hand up there for them to sit on. When I accommodated them they accepted at once. As this has happened scores of times, both where the initiative has been mine (by holding my hands up to the wire while the birds were some distance away) and where it has been theirs, as in the present instance, it does not seem improbable that we have here an instance of learning and not of mere coincidence.

Chiisai selected my left hand and Okii the right. Both began to talk volubly, as when discovering nesting material. Both had been previously given all the meal-worms they wanted and were not hungry. The corner that Okii occupied is the favorite one for some reason or other. Chiisai now moved over to join Okii. Both tsipped at each other with wide open bills and Chiisai left to dig and sing.

Okii nowwent through an elaborate preening operation, removing several soft feathers with his bill. This finished, he lay down on my hand and began to sing softly, opening and closing his eyes: a slumber song. Soon Chiisai's efforts seemed to stimulate him to greater elaboration of his song and increased volume. (He occasionally paused and looked down at C). We seemed well on the way to a notable performance when a yellow-jacket began to buzz around us. This was altogether too tempting for O and he snatched it out of the air--an action that I have always guarded against--as I knew that if it ever occurred, the next act would be to look for a good place on which to hammer it, and I do not care to be made a chopping block for yellow-jackets.

Consequently I "dismissed" Okii with his prey and he executed it elsewhere, having no chance to "put the bee on" me.

Rhody did not appear at the cage until about 1:25, when I saw him coming from the north-east outside the fence. He went at once to his dish, drew back when he saw yellow-jackets on the meat, awaited his chance, made one snatch and retreated in triumph.

Meanwhile I had an opportunity to observe how a magpie treats these insects. Kack caught one with her bill and put it under one foot and there held it while she broke it up and then ate it.

2:45 P.M. I have just come from listening to a full hour's concert by O and C during which there was no cessation of songfor more than a few seconds at a time. It sounded as if there were several birds singing at the same time. During this period both reached the, as yet, high-water mark in variety and volume of digging and quarter song.

Also, for the first time, there was mimicry. Chiisai was the only one I could watch, Okii being out of sight in the inner cage. Chiisai, several times, introduced mimicry of the California jay, the robin and the quail. There can be no doubt of it.

R's roosting time.

At 3:45, after looking carefully in all Rhody's known haunts about the garden and not finding him, I went to the roost tree. This time I was early enough, for he was not there. After toiling back up the hill in the hot sun, there was the old reptile on top of the cage watching the magpies! He lost no time in accepting my invitation to the yard to get a mouse. After loafing for half an hour on his favoredoak branch, he began his march toward the roost tree, stopping for several minutes at one point to watch a band of quail in a bush 6 or 8 feet from him and making no hostile move. He went out through the gate at about 4:30, but I did not follow.

Sept. 10th.

Too busy to give much attention to the birds and nothing of particular interest was observed. Rhody was satisfied with one mouse and two helpings of meat and left early for his roost.

Okii and Chiisai indulged in digging song often and for long periods.

Sept 11th.

O and C again sang often with a marked tendency to extend their dig-singing into quarter song. There was one period of about an hour when both sang almost continuously at the same time, so that the cage was full of music. They could be heard at a distance of about 100 feet.

R's roosting time still earlier.

Rhody was satisfied today with one mouse (for which he cried) and no meat. This was at 1:20 P.M. He disappeared about 3 o'clock and at 3:15, I found him in the ladder tree. For 40 minutes he remained in one location preening and enjoying the sun. At precisely 4:08¾ he jumped across to the roost tree and in a few seconds was lying in his house. (Sunset 6:25).

Unless a fog bank appears in the west he will be in full sun while in his house for more than two and a quarter hours. This matter of late exposure to sun is undoubtedly one of the factors bearing upon selection of roost location.

Sept. 12th.

At 6:55 A.M. Rhody was still in his house in the roost tree. There was a low fog, but we were in the upper surface of it and the light was good. Rhody had undoubtedly been in his house for about 15 hours continuously, and he is in that portion of his yearly cycle in which his hours of rest in his night roost exceed those during which he is "up and about". I do not know when he left his roost, but he was on hand for a mouse about 9 A.M., at which time the fog had dissipated and the day promised to develop into a typical September one --as it did--with temperatures running well up into the eighties.

September 13th. and 14th.

This month is now running true to form.

At 6:55 A.M. Rhody was not in his night roost on the 14th. and while his actual roosting time during this period was not checked, it was later than 4 P.M.

Okii and Chiisai, though still moulting, become noticeably sleeker and handsomer. Chiisai's twisted rectrix now lies flat against its mates.

Chiisai continues to exhibit nesting instincts, at times quite strongly; Okii almost not at all.

Okii now seems more interested in affairs of the world outside the cage and is more restless, suggesting some correlation with the approaching(?) thrasher "convention season", which latter, however, gives no evidence otherwise of being at hand.

Except for O and C's singing, no thrasher song is being heard at this place, but Broken-wing still visits the feeding stations.

September 15th.

Rhody was not in his roost at 8 A.M.

At 9 A.M., while I was walking about the garden, he suddenly appeared from nowhere and began to loiter around me suggestively. When I took the first step toward the mouse abode he darted off in the lead in such a hurry that he passed out of sight beyond the trees where the path makes a reverse turn from the driveway without once looking back at me. But when I reached the turn a few moments later, I cameface to face with him on his way back to meet me, presumably impatient at my slow progress. Satisfied that I was really going to fulfill my implied promise, he faced about and led the rest of the way, where he was given a mouse. No display of any kind, but prompt consumption, as has been the practice for several weeks now.

He now went to his oak branch near the tool-house for a long rest: three hours. When I passed him for the dozenth time in the course of some puttering I was doing, he closed his resting period by following to the shop-yard for his second mouse of the day at about 12:15.

It was now in order to seek a cooler resting place. This was found to be alongside nest No.8-37 on top of the lath house in the shade of an acacia and a pine.

About 1:45 alarm notes of quail were heard to the south and he reacted to them at once, finally sailing down from the roof to investigate. As he frequently does in such instances, he proceeded directly toward the sound, ending up in this case by joining the quail at the south fence. He sat on a stump 5 or 6 feet from them

in the shade, watched them and preened. The quail were not alarmed by him and had ceased to sound their alarm before he arrived.

He and the quail have always seemed to be tolerant of each others presence. I have seen him out in the field in the midst of a flock of them feeding.

The stump seemed to meet his requiremets for the time being, so I left him there at 2 P.M., still preening and occasionally craning his neck to gaze through openings in the foliage at events in the street below. (Temp. 82°). Rhody always seeks shade at at this temperature--in fact at much lower figures.

At 2:15 he came up to rest in the cool breeze under the dormitory tree near which I was sitting. In about 10 minutes he went to the cage and had some meat, then sought a comfortable place on top of the cage where, at 2:45, Julio tossed him a salamander, which he brought down and ate on the ground: the sticky slime exuded by that creature bothering him considerably, as always causing him also to wipe his bill and "smack his lips" for the next ten minutes. Further rest on top of the cage was now in order after which a visit to the mirror merely to gaze at himself dispassionately. (Not only has he abandoned the presentation of trophies at the mirror, now that the mating season has ended, but not for many months has he displayed for the other bird on the the other side (Mirror dance).

Now followed an effort to interest the young thrashers at the corner of the outer cage, by posing and peeking out at them from alternate sides of the chemise bush. This bringing no response, he came meekly to where I sat, suddenly altered his tactics and went off on one of his rattle-booing circuses through the bushes, then, as I thought, down the lower road toward his night roost. But when I went to look, he stepped out of the bushes and followed me to the shop-yard (3:35 P.M.) for his third mouse of the day. Thus between 9 A.M. and this time, he has had three mice, a small piece of meat and a salamander. In justice to him, however, it should be said that the mice were small: perhaps in the aggregate not weighing more than one of the largest size. Nevertheless he surprised me with the frequency of his meals.

He now went to sit on his oak branch
At 3:55 he was not there.
At 4:02 he was not in his house in the roost tree.
At 4:05 I saw him coming through the baccharis. Almost at
once he appeared in the ladder tree.
At 4:09½ he made his jump across to his roost. (Sunset 6:19).

Sept. 16th. to 19th., incl.

During this period, on the two occasions when R's roosting time was checked up, he showed departure from expected trend.

On the 17th. I led two friends to the roost tree to see Rhody. One of them (R.E.H.) had written me from Los Angeles that he would be in this vicinity on that date and would especially like to see the bird "perform". Consequently, a little after 4 P.M., with another friend (T.F.O.) we went to the tree. No Rhody! We had another try a little after sunset. Still no Rhody, much to my chagrin. He had been doing the usual things up to about 3:30 P.M.

The next day he was about the place as usual, but I did not time his roosting.

On the 19th. he depart~~ur~~ed in the direction of his roost about 3:30. I followed about 3:45. I could find him nowhere; until at 4:10, by accident principally, I spotted him roosting quietly in the ladder tree entirely off his beat. I suspected that he might have taken a fancy to that location on account of the sun's being hot in his house,

and that perhaps he had been there when we were looking for him without success on the 17th. Accordingly I waited; but he did not stay there and jumped to his roost tree, entering his house at 4:28. It was noted that the interior of the house was fairly shady at that time, but would be sunny a little later.

There seems to be a growing tendency for him to have his last meal (from me) earlier in the day.

During this period there was no noticeable change in the young thrashers.

Sept. 20th.

Rhody had two good helpings of meat during the forenoon, and as I had not seen him after about 1 P.M. I looked him up at 3:45, finally finding him at 4 P.M. a few feet from the ladder tree (15') inspecting a bush. I approached to within 4 feet. He flirted his wings at something in the bush (as he does when trying to make a lizard run) and made an unsuccessful attempt to catch whatever it was. To test the theory that he ought to be hungry, since he had had no food from me for several hours (notwithstanding the next to the last sentence in yesterday's notes) I started up the sidewalk toward home. He came trotting along behind like a little dog--directly away from his roost-tree and at roosting time, be it noted--until we arrived at the "mousoleum", he taking one or two short cuts in order to keep pace with me, a distance of about 200 yards, all up hill and by a devious route. It tickled my vanity to observe that Rhody, on arrival, was also "blown" and had to keep his bill open and pant. The mouse was given short shrift. I had to go back and get my car which had been left at the curb near the roost, and, on returning here, Rhody was already on his way back to the roost tree. (On account of the uncertainty of his movements I find it a good plan, when watching for him to go to roost, to park my car nearby as a comfortable place from which to observe events, rather than to stand in the open on the sidewalk and invite the attention of the passing public).

Sept. 21 to 25th., incl.

During this period all birds under observation were frequently observed, but no changes in trends were seen.

Okii and Chiisai continued their digging songs with no apparent development beyond the stage last noted, when comment was made to the effect that there was atendency to continue this song after digging had ceased for the time being: that is, a tendency for it to merge gradually into "quarter-song".

Except for the few instances noted, there has been no full song by them and, as far as I can see, there has been nothing that seems in any way a step preparatory to full song.

Their slumber, digging and quarter songs--unless my recollections of Brownie's are at fault--are, at least as to the first two, substantially mature in volume and quality and in the very beginning differed little, if any from those of the adult bird.

To the best of my knowledge and belief they have had no tutelage whatsover in thrasher song of these types and as far as more advanced types are concerned, since Brownie was killed before they were brought here, I believe that the number of thrasher songs heard by them- except when they were in the nest--is completely negligible, insofar as concerns any probability of learning.

It is true that Broken-wing was here for a time, but any full

song by this bird could have been heard only at a distance, and BW long ago failed to adopt this as her(?) territory.

As a consequence I believe that their singing to date is "self inspired" and is merely an expression of an ancestral inheritance. They "just have to" sing.

Curiously, as only a wire fabric is all that separates them from the magpies, their "instruction" to date, if any, has been in magpie song, yet not one cheep have I heard from either that in any way resembles magpie vocalization--with one exception: and that is in the case of certain magpie notes that are known to resemble some of those of the California thrasher. This is one of those numerous instances of accidental resemblances in the songs of birds.

Sept. 26th.

7:20 P.M. Well. About 8 AM. when Okii and Chiisai came to meet me at the entry of the cage, I found the former's head had a bald spot about one half inch square where the feathers had been scraped off, and there was a cut with dried blood also. I did not notice it at the time, but an hour later, it was seen that Chiisai had suffered a slighter injury at the base of his bill. These the first observed disfigurements traceable to their being caged, if we except Chiisai's toenail stepped upon by me. (Incidentally this claw is extremely slow in being replaced. The new one--which may be deformed--is only about 1/16 inch long after all these weeks).

I was then confronted with the same dilemma as in the case of the two young roadrunners, Archie and Terry: Was it a case of disturbance by a night prowler, or was it internal conflict due to growing incompatibility of the maturing youngsters? Careful search disclosed a tuft of small head feathers at one place on the wire of the upper annex. As the roof had been covered with the awning, and the birds have been showing increasing constraint in their relations, it seemed that one of their frequent little sparring matches might have developed into something serious-- Archie and Terry all over again.

I resolved, therefore to give them their liberty and this is h the time of year that I had previously decided would be the most advantageous. Accordingly as both Mr. Cain and Donald Brock--today--gave it as their opinion that the two birds were properly banded after inspecting them, the cage door was opened at 2:30 P.M. when no visitors were ~~apparent~~. present

Liberation of Okii and Chiisai

Neither bird was in haste to come out. Chiisai was the first, but he attached no significance to the event beyond the fact that, for some unexplained reason, he could now dig at the threshold of the door where had always wanted to dig but could not. He could see little more than he could with the door closed, because the door was of coarse wire mesh. Really he could see less, because he did not even have the wire now! He did not appear to notice th the world had changed a particle. The ground within 6 inches of the door was all that concerned him, so he dug and, when tired of that went back into the cage.

Archie followed in a minute or two, but to him also, the world was a flat plain suitable only for digging into and extending no more than three feet from the cage. There was no up and no down until a hawk rustled in the pine tree overhead (Equivalent to our hearing something in the mystic's "fourth dimension") whereupon both birds froze. Neither looked up into the tree. Chiisai, who was now standing in the entry, said quilk, qulk, qulk, very softly

when I went over to him and poked him with a finger, but would not budge. They remained thus for several minutes, then O resumed his digging at the outside of the cage foundation and C again retired to the cage.

Okii now proceeded to dig along the west end of the cage, then along the outside north wall, a task consuming about two hours. It was about an hour before Chiisai decided to come out and undermine the west wall. It was another hour before he discovered that the pine tree overhead extended upward and the earth consisted of something else than a mathematical plane. This required investigation, so he flew to my shoulder and from there to the lower branches of the pine, gradually climbing higher and devoting himself wholeheartedly to staring at the wonders of the world: cities and seas, spread out below him. No doubt he was impressed. He had never seen anything like it before. A few minutes of this and he sailed down to a maple in the valley below and I looked up Okii. He had finished the back wall and was now making progress down the east wall where I met him. He was glad to have a worm or two from me. The earth was still flat for him and he had never known how much of it there was that needed to be dug up. He was getting results too.

Finally, after working hard about the roots of a large acacia that overhangs the cage, he observed that, in this world, there were things not held down by roofs, so up he went and disappeared in the thick foliage, where I saw and heard nothing from him for a long time. Now, after three hours, there was nothing but an empty cage and no signs of a thrasher anywhere . I went to the north fence and called toward the maple. Soon the leaves began to move and a thrasher sailed down and worked his way up toward me through the baccharis. As it approached it began to make the baby vip call and Chiisai climbed over the fence to get worms from me, thereafter following me to the cage and entering of his own free will ahead of me. About 5:45 continuous, loud scripping was heard near the cage to the east and a thrasher flew from tree to tree, Chiisai answering from the cage. Okii then came to the cage and tried to get in through the roof. He and Chiisai now tapped the window glass opposite each other. Chiisai now came out and joined Okii on the roof and they "talked" silently to each other face to face. Okii now came in and he yipped for attention. While giving it, Chiisai disappeared, but I located him when he now began to yip, and he followed me into the cage.

I shut them in for the night and saw that the roof was completely covered to exclude possibility of disturbance from above. They will be released again in the morning.

Sept. 27th.

At 7:15 A.M. I opened the door of the cage (both thrashers were waiting there) and O and C came out at once: Okii to jump up to my hands for worms; Chiisai to dig by the door. In a minute or two Okii dropped down and attacked him, pulling out a tuft of feathers (the first damage of one by the other actually seen being done). Chiisai resisted and did not retreat. Okii did not press the matter further at that time. It was noted that there had been no injury to either bird during the night. Both wandered to the lath house and dug inside, where I turned over "flats" for them to enable them to get the centipedes and other creatures underneath. In the next ten minutes Okii atacked Chiisai twice more, but mildly, Chiisai retreating unhurriedly.

An hour later they were found: Chiisai on the roof of the lath house and Okii digging inside.

Chiisai now began to explore the surrounding trees, including the glass house in the dormitory tree and I concentrated on him. I wanted to introduce the thrashers to the garden on the south side of the house, where they would find ideal conditions from the thrasher view-point, so took advantage of their tendency-developed in the cage--to come to me sooner or later, even when not directly seeking food from me. In other words while they have not been accustomed to follow me about as a chick does a parent, xxk they have, nevertheless, shown a marked tendency to keep in touch with me, even if only to dig under my feet.

I now began to "drift" toward the south and west, Chiisai following (whenever it pleased him) mostly through the branches of the trees. In this way I led him to the shop-yard. From there to the upper garden (patio) he quite definitely followed me, and promptly. The new world he entered fitted all his requirements and he is still (11:55 A.M) there digging and exploring the trees shrubbery and pools, bathing, coming to me for worms and (although I did not see it myself, being engaged with Okii elsewhere at the time) he entered the house either through this room or the front door, and was found by Julio upstairs in my bed-room. He could not have entered through a bedroom window directly from the trees as such windows as were open were screened. (12:03. I hear him singing digging song somewhere nearby now).(Went out; he yipped and "tsee-pooed"; came out from bushes; jumped to hand).

Okii did not follow as did Chiisai and I found him in the cage at 10:15: in the upper annex hopping restlessly back and forth, forth and back, endlessly. He would not come out or down. Fully three quarters of an hour he kept this up. Something missing from his accustomed environment (Chiisai?). Finally he came down to me for worms. Then followed a long digging song, merging into quarter song, at my feet, and reaching up into half and even three quarter at times when he was not digging. The song contained veritable jay and robin mimicry and is the best I have heard from him. Finally a rootlet caught his eye and he took it up to the nest with voluble "talking". I joined him and furnished additional material--all thankfully received and placed with much talk. This "talk" I am much inclined to regard as real song, perhaps "nest-building" song.

In a few minutes the impulse ceased. It was the first exhibitin of it by Okii for some days. He now went back (roughly 11:50) to the upper annex to resume "pacing the floor".

While I was having luncheon in the cloister Chiisai continued to sing nearby. If I approached him he changed to his baby yip and was eager for worms.

At about 12:50 I found Okii still in the cage "pacing". In about 10 minutes he joined me in the outer cage and was given worms. Some of them he would carry about for a few seconds "talking",a recrudescence of the feeding instinct (brought out by Chiisai's absence?). For about 30 minutes he sang, mostly at my feet, beautifully: digging,quarter-and half-song. I wonder if his indisposition to leave the cage is a result of his having found that food is not so easy to get outside.

At 11:30 I returned to Chiisai's present domain, Okii ceasing to sing as I left. (I hid behind the trees to listen).

I could not find Chiisai until he revealed himself (by beginning to utter his baby call) in a rhododendron. He was hungry. Perhaps he too is finding poor pickings in the outer world in spite of his diligence.

At 1:50 I returned to Okii. He was still in the upper part of the cage, silent. I sat in the outer cage. In a few minutes he

was up in my lap for a supply of worms; then down to dig and sing at my feet uninterruptedly, except for two more visits to my lap, for half an hour. On his last visit he abruptly departed for the upper, inner cage and ceased to sing; presumably considering that he had paid me amply for his meals.

At 2:35 I located Chiisai, still in the upper garden, by listening for his yip in response to my calls. As soon as I sat down he was up in my lap for worms, but made no return for them in the way of song when he jumped down again. Okii was still in the cage.

About 3:45 Chiisai, although given worms again to supplement his own pickings, continued to yip as if dissatisfied about something. It occurred to me that he might be missing Okii or the familiar surroundings in the cage, or both; so I turned in that direction. Although I did not call him at first, he ran and flew to keep up with me, finally taking to the trees overhead and, at one turn in the road, took a short cut although the cage could not be seen by him. As I approached the latter, I slowed down and allowed him to take the lead and enter the cage ahead of me. This he did promptly, making direct for the entrance as if he fully understood the proper course to pursue.

Okii was still inside and C went straight to him. A brief exchange of "soundless talk" and that was all. I shut them in for the rest of the day and the ensuing night.

It is to be noted here that Chiisai was offered no reward as an inducement to follow, "asked" for none and received none.

Rhody roosts earlier.

At 3:45 I found Rhody already in his house in the roost tree--the earliest he has been seen there this autumn. How much earlier he arrived I do not know. (Sunset 6:00 exactly). He had had only one mouse during the day: at about 12:30. He was hanging around the open door of the cage at the time, having eaten the meat, and Okii was out of sight inside. Rhody, therefore, owes this one mouse to my desire to get him away from the cage while I was away having luncheon. I did not want him to go in and possibly force an interview with Okii in my absence, and yet I wanted Okii to be free to come out.

My objective, as these notes show, in bringing Okii and Chiisai here, is to replace Brownie, primarily. I have hoped that at least one of them would stay, or, if they prove to be of opposite sex, both. If of the same sex, Okii is the one I have thought most likely to remain as he was from the beginning larger and stronger, possessed of greater initiative and quicker to adapthimself to new conditions and more apt at learning. Okii has seemed more "male" in his characteristics and Chiisai more of the gentle, timid, feminine type. Yet the differences are slight.

I realize that I have pictured to myself Okii eventually driving Chiisai away--if of the same sex--and, if male, claiming this territory if some older thrasher did not anticipate him. The latter event, now that Broken-wing does not appear to have laid claim to the territory, seems less probable than formerly.

In view of the differences cited between the two birds--slight though they are--I really expected that Okii would be the one to show the more venturesome spirit on release; yet, to date, such is distinctly not the case. As far as I know Okii has never been more than 40 feet from the cage and, today after about 3 hours at large, returned to the cage and there stuck. Perhaps he is the wiser bird and has reached prompt conclusions as to the relative

advantages of "rustling his own grub" and having it handed to him!

September 28th.

Okii remained in and near the cage all day; Chiisai wandered to considerable distances, much of the time out of sight.

I go out of commission.

September 29th. and 30th. (Notes written Oct. 15th.).
I spent these days flat on my back, under observation; about 9 P.M. on the 30th., being operated upon for appendicitis.

During this period Julio reported upon behavior of Okii and Chiisai, who continued about the place, tame and friendly.

October 1st. to 13th. at 3 P.M.

For this period notes are based on observations of Julio, who recorded his observations. Quotations are from his notes.

"Oct. 1. Okii stay inside of the cage so did not care to come outside, just go as far the door, go back and forth, remain inside until 2:00 and then went in the lath-house and diging, and Chiisai diging around the loquat tree when I called him and offered some worms and took it out from my hand. About half an hour, Okii is inside the cage again eating some of the soft food, when I go to ward him and he came to the door I offered him some worms and he start to sing those little sof song."

"And Chiiai came inside too and they both sing. When I come outside C follow me, so Okii stayed in. So I go to continue my work building the wall. About 3 hours I heard a little noise behind me I look at it and C there diging. I went back to the cage and see Okii, he was outside, I think he was looking C, when I go back to my work Chiisai still there, I offered him some worms, I toss some worms away from me about 12 feets, he went after them. He went and the lawn and begin to dig. About 5 o'clock they were both inside already. At 7 I went there and see if they are in their roosting place, so there they are."

There appear to be some discrepancies in Julio's notes, which he is unable to clear up. However, it appears that, on the 2nd., Okii remained in the cage most of the day, and Chiisai, outside.

The high-light of this day was the reappearance of Broken-Wing with another thrasher, both singing loudly. Judged by the observation that Brownie remained mated to the same female for more than one season, it is probable that the second bird was Broken-Wing's mate. In which case, since BW is definitely known to be one of the parents of O and C, here was an opportunity to observe the reactions of parents and offspring toward each other after being separated several months. J's notes show that both Chiisai and Okii were attracted by the singing and "went to see what it is".

Okii slept in the cage that night and Chiisai elsewhere.

On the 3rd. at 6 A.M. Julio heard scripping and investigated. Broken-Wing, Okii, Chiisai and a fourth thrasher were together. There was some loud singing up to 11 o'clock and a little mild chasing of the young birds by the adults, followed by scripping, then gradual separation.

Okii sang softly for 3 hours "alone by himself" 20 feet from where Julio was working and also came to dig in the gravel with which Julio was mixing concrete. He was in the oak by the living-room chimney at 5:45, came down for worms on call and returned to the tree for the night. Chiisai was seen making for the glade "before dark".

J kept no notes on the 4th., 5th. and 6th., but reported the continued presence of O and C by 'phone to me, C showing increasing tendency to disappear for long periods and Okii, two nights in succession, sleeping in an oak at the western window of the living room.

On the 7th., a windy day, Okii preferred to stay in the cage most of the time. J says "he did not like the moving trees very much", thus furnishing independent evidence on this point. For a time Rhody joined him in the cage, both birds "doing nothing".

At 4:20 Rhody was already in his night roost and Okii left the cage, not to be seen again that day.

On the 8th. at 7 A.M. Okii was digging in the cage, but left in about half an hour, going over the south fence in the direction in which thrasher song could be heard. Neither bird was seen again that day (C not at all).

On the 9th. Okii, only, was seen.

Oct. 10th. Okii was scripping in the cage at 5:30 A.M. About 6 A.M. a thrasher scripping at the oval lawn proved to be Chiisai, who jumped to J's lap for worms, thence to the cage to join Okii and to "dig and dig".

At 7:45 Broken-Wing began full song near the oval lawn and, at 9 A.M. attracted another adult who sang full song from the old oak. BW moved to a pine tree and O and C came out of the cage to stand under the pine "doing nothing". BW came down and was joined by the other. All four birds were together. There was a little skirmishing about, the two adults lefton J's approach to about 70 feet and O and C came to him for worms.

Rhody now appeared for his mouse.

At 12:30 two thrashers were singing outside the fence; Okii was dig-singing in the upper garden and C was not to be seen, O was still in the upper garden at 2 P.M.

On the 11th., 12th. and 13th. Okii and Chiisai were not seen by Julio. He got the impression that they had gone off in the direction of Mr. Sampson's as there was much sound of thrashers from that direction.

October 13th. (from 3 P.M.)

Got home from the hospital at 3 P.M. Raining hard. At 3:30 it had stopped. Went out and encountered Rhody at once. He was quite coquettish; jerked head and tail impudently when I talked to him and hrooed once; then sidled toward the mousery, but Julio, anticipating his wants, brought him a mouse which he gobbled placidly in the presence of four persons. No signs of thrashers.

October 14th.

In the early morning thrasher song to the west, southwest and from the old oak to the east.

Rhody did not appear during the rainy morning, so at 2 P.M., Julio went to his roost, finding him already (or still) in his house, but he sailed down for the proffered mouse then sunned his back.

No signs of O and C all day.

Oct. 15th.

Much thrasher song west and south west from 6 A.M. to 9, ending at the oval lawn.

Rhody not in his house at 9:30 A.M. Found waiting for somebody to give him a mouse at the tool-house at 2 P.M. 3:15 still sitting nearby. Cloudy. No O and C.

Oct.16th.

Although no thrasher song was heard during the day, we are undoubtedly now in the thrasher "Convention Period". Owing to my two week's absence I can not say which end of it we are in.

No sign of O and C during the day.

Oct. 17th.

From about 6 A.M. until 9 there was much thrasher song in al directions, culminating in a fine performance by Brokenwing and mate in full view about 50 feet from me in a Catalina ironwood by the oval lawn. The principal part was taken by BW, the mate's being completely dominated by it. I watched and listened to these two bird for about three quarters of an hour, during which time BW sang almost continuously, not even shifting his (?) perch. The mate frequently left the tree only to return again and sit a yard or two from BW. It was seen that this bird has a much longer and more sharply curved bill than BW.

When they left I followed to the Scamell house, where BW continued to sign from the top of a deodar for a few minutes longer, a softer and less staccato song, then sailed down to the south west into the canyon. By this time all thrashers, of which there had been two or three more heard singing from distant points, had ceased, and for the rest of the day only a few random calls were heard, although BW and mate were again here.

As to the quality of BW's song compared with Brownie's, perhaps fair judgment can not be rendered at this time, since this is the period of "hysterical" song when quality is not at its highest, and moreover, the two birds have not been heard under all conditions which influence their song. At present the impression is that BW is less melodious and versatile than B.

Oct. 18th.

Widespread, early thrasher singing, ceasing abruptly about 8 A.M.

Chiisai pays brief visit.

About 8 A.M. Julio saw Chiisai at the glass house in the dormitory tree, identifying him by the band on his left leg. J went to get him worms, but C had left when he returned.

At 8:30 I found Rhody occupying his post on the west lot and tossed him worms which he caught expertly. This is perhaps the beginning of a period of reoccupancy of this favored spot. favored at this season!

At 9, while sitting at the oval lawn, I saw BW and mate approaching from a hundred feet away along the ground . They came and ate from the feeding station 15 feet from me, remaining in the immediate vicinity 15 minutes, then drifting off to forage amongst the shrubbery. Bw took the lead in all things, followed closely by Longbill, easily identifiable by his beak. Undoubtedly they are mates and, I think, BW is the male.

Thus it looks as if O and C are being replaced by their parents. They "talked " to eachother in fluting tones audible perhaps 20 feet, like Brownie and Greening, and their relations were those of adult birds.

Oct. 19th.

A quiet morning for the thrashers. It was not until 11:30 A.M., when I went to look up Rhody, that thrashers appeared and sang at this place. A few distant scrips had been heard earlier off to the south.

At 11:30 I went to the wall overlooking the west lot and called Rhody. In a few minutes he rattlebooed repeatedly some distance away. I shifted position so as to see all of the south side of the west lot (Map 1313A). He was seen near the S.W. corner gliding amongst the bushes and peering with head close to the ground in all directions.

More calling brought him to me over the fence, where he seemed more interested in observing my efforts to attract a thrasher that had come out of the west lot almost simultaneously and sat in a tree over my head. (The effort failed and the thrasher--unidentified--left for the Scamells'). I now moved off 25 yards and stopped. Rhody followed to my feet. I dropped him worms. Suddenly for no apparent reason, he sailed back over the fence in a curving glide through the trees. The impression I gained was that, at the time I called him, he had been interested in thrashers and jays in the brush, and now went back to look over the field again.

I went and got a mouse and, on returning, showed it at the top of the fence. R came at once, flew up to the fence, and took it from hand, returning at once to the brush. Usually he loses interest in me after having a mouse, so I was surprised to see him come back over the fence and walk to the base of the wall, on top of which I now stood, and loiter about near me but observing everything near at hand, apparently with some special interest. (There were still jays and thrashers back in the thicket). I now showed him the red box in which I had carried the mouse and he flew up to me and followed along the driveway, diverging at the oval lawn to investigate (as it seemed) the two thrashers that were now (12 M) singing in the ironwood there.

This finished, he joined me, but would follow no farther than the pine tree at the new rhododendron moraine by the driveway near the tool-house. Here he stuck and refused, mice, meat and worms. Why did he follow me there if he wanted nothing from me?

Until 2:45 P.M., except when (1:30) he followed to the shop for a mouse, he did not move over ten feet from the point where he had first stopped. There he rested on the ground and in a ceanothus, even returning to the same place after eating the mouse. About 3 o'clock he wandered off to the west.

The thrashers at the oval law, after singing for a few minutes longer, were not heard again, and as I was concentrating on Rhody, no attempt was made to identify them. They probably were BW and LB (Longbill).

Oct. 20th.

Much early thrasher song to the east and south, ceasing abruptly about 8 A.M.

At 8:30 A.M. I called Rhody three times at the west fence, and waited quietly. In a few minutes he appeared out of the brush, peering about, head held low. I started for the mousery followed by him. He was very lively and had to make several side trips to skylark through the bushes along the way where there were birds, but came all the way for his mouse.

About 2:15 P.M. he made his presence known to me by stepping out of the shrubbery in the garden just as I came out of the house. This meant, of course, another mouse. About 3 he gradually began working his way toward his roosting place. (Temp.85°).

Weather--and its influence on R's roosting time.

Referring only to the present season, there is no evidence that daily temperature conditions have affected Rhody's time of going to roost. With the exception of two days on which rain fell, October has been a month warmer, if anything, than September: normally the warmest month of the year. It is as if the warm spell had been somewhat late in arriving. For nearly three weeks, maximium temperatures have been running in the high seventies and middle eighties, with cloudless skies.

These are not conditions that would lead one to expect birds to seek early shelter, yet R continues to retire early, although, I have not timed him accurately for about 3 weeks.

Oct.21st.

No thrasher song at all up to now (1:30 P.M.)(Temp. 85°).

At 8:30 I went down to check up on Rhody's occupancy of the west lot (Temp.70°) finding him there catching butterflies at his post. He has evidently, or rather apparently, now resumed his late season habit of loafing here. This, also, appears to be uninfluenced by temperature, for under prevailing conditions, he wants shade, and his post is a sunny one.

On invitation he came to the fence and cried for his mouse. He preferred to stand there and cry rather than to jump over; but when I proved obdurate, he came.

He did not come to the cage for meat, so at 1 P.M. I again went to a point 50 feet from the fence and called. In a minute or two he came out of the thicket, flew over the fence, up to the top of the retaining wall and trotted along behind me obediently all the way to the tool-house for his mouse. He is sticking to the west lot.when not here.

R's roosting time.

About 2:15 he wandered off to the west again. Shortly after I had to go down town, so stopped at his tree. As luck would have it, in a few seconds a tawny streak passed through the air from the ladder tree and at exactly 2:40 Rhody arranged himself in sleeping posture in his house. (Sunset 5:25; temp. 84°). Cloudless sky, but the house shaded by foliage.

R's moult.

Rhody is doing little preening now, but while he has all of his rectrices, the pattern of spots is not yet symmetrical, showing that all have not grown out to full length. Consequently his moult, I suppose, cannot be considered as entirely completed.

October 22nd.

3:40 P.M. No thrasher song heard up to now, but thrashers seen at the oval lawn occasionally.

At 8:30 A.M. Rhody was at his post on the west lot and came to the fence, through which I handed him worms.

At 1 P.M. I called at the fence and he came over for a mouse, waiting in the clearing, watching accipiters overhead. At 1:30 he was ready for a second mouse.

His roosting time was not taken. A cooler day: Temp. at 3:30 P.M. 62°.

October 23rd.

Thrashers away?

No thrashers seen or heard all day .

I did not look up Rhody until about 9:30 A.M., when I went to the fence and called; but he did not come.

R appears on call.

About 11, however, he did come out of the thicket in response to call and followed happily to the mousery. After eating he sought shade in the lower branches of a pine where he could look ou over the country spread out below.

R eats 2 mice in 5 minutes.

About 1 P.M. I found him near this same tree and he again tagged along behind for a mouse--his second. In less than 5 minutes he saw me about to enter the tool-house again, and to my surprise, came for still another mouse, which was given him. (These are smal mice).

October 24th. and 25th.

Thrashers sing.

Considerable thrasher song in the distance for most of the time, both mornings, but no thrashers seen here.

R's present activities circumscribed. Reason?

Rhody seemed to divide his time between the garden and the west lot, apparently doing little foraging abroad, depending upon local supplies of meat and mice.

Since his reproductive urge has departed for the season; grub is obtainable without effort and his moult no longer requires hour of preening, there is really nothing for him to do but loaf. No wonder he goes to bed early.

October 26th. to 28th., incl.

Thrashers sing.

Thrasher song in the distance in the early morning on the 26th, but none the other two days.

R's roosting time.

Rhody divided his time between the west lot and here. His roosting time was taken on the 28th and found to be 3:21--later than the last time noted. (Weather, bright, warm, calm; temp. about 70°).

Pheasant and Rhody. Attotude toward each other.

On the morning of the 27th, while looking for Rhody, I came across a cock silver pheasant instead, in the orchard. (Dr. R's bird?) I went to the tool-house to get some feed for him and, as I turned back toward the door, there was Rhody waiting for me and crying. He had found me instead of I him.

The two birds were aware of each other's presence and were a little "stiff".

The next morning, while waiting for Rhody to come over the west fence, I was startled by the pheasant suddenly and silent appearing at my elbow as I crouched on the ground. He wanted food from me, so I got him some. Rhody would not come over the fence while pheasant was near me. The pheasant also watched Rhody (25 feet away) and, for a time, appeared to freeze.

October 29th.

Brokenwing sings nearby.

About 9:10 A.M., as I sat near the oval lawn, thrasher full-song was heard nearby. It proved to be Brokenwing singing. He came and ate the suet "pudding" in my presence (25 feet away) then moved to the ironwood tree, about 15 feet farther, and continued the song.

His mate comes. Longbill also sings.

In about 10 minutes it was answered from the east, a long way off. This bird began to approach and soon was singing about 50 feet from BW : an entirely different song, somewhat inferior to BW's. The latter continued and, for the first time in my experience, I heard a California thrasher sing the same musical phrase five times in close succession. Bw did this repeatedly, varying from two

Unprecedented repetition of phrases.

successive utterances of the same phrase, through three, four, five and "five and a half"; the latter being when he finished the succession of 5 and began the next phrase by using the first part, only, of the one just five times repeated.

A new phrase

Song changes when both in same tree.

Bw and LB a pair; so are parents of O and C.

This phrase was a striking one, new to me; one that can be easily recognized again when heard in the future. The other bird now joined BW in the ironwood and the character of both songs immediately changed, being more conversational and of about the volume of quarter song. BW's new phrase could still be heard occasionally, but softly. They sat about 4 feet apart. Song ceased and BW began to peck at the leaves near him. They remained in the tree for about 10 minutes longer, then Bw led the way to the suet feeding stations. It could now be seen that the other bird was Longbill. BW had called her from a distance. They are evidently a pair. They finally drifted off toward the west, from which direction song could be hear occasionally up to 2 P.M. About noon I went down there and again identified both birds.

Pheasant frightened by R!

Mutual shyness.

While I was watching them at the oval lawn the pheasant came and wanted food, taking worms from hand with little hesitation. When I went to the west fence to look up Rhody about 1:30 P.M. (I had given him worms there earlier in the day) the pheasant followed.

Rhody was shy of him, but came to the top of the fence, and at last flew down. This scared the pheasant, who immediately bolted out of sight! Rhody would only follow as far as the side gate, and there he dashed out to the street, apparently afraid of the invisible pheasant. I went and got him a mouse and he came back at once for it, but would not come up into the garden.

RHODY MAKES MARKED DIVERGENCE FROM ESTABLISH D PATTERN. (in roosting)

At 2:20 I found him sitting in the lot next to the Scamells' and gave him another mouse to test the theory that, as this would probably satisfy his food requirements for the day, he would go to roost early. He went to his favorite post on the west lot, bush C (See map). I got my car and parked 25 feet from him to watch in comfort when it appeared that he was going to stick indefinitely--and he did stick! I dozed in the car, but each time I awakened it was seen that he had not shifted an inch. He appeared to watch me most of the time. At last it occurred to me that perhaps he wanted another mouse and would not go to roost until he got it; so I surrendered meekly about 4 P.M., got him a mouse, and he was not interested in the slightest. He turned his back on me and looked off far to the south.

A mystery.

All wrong!

Enters first known roost.

About 4:10 he directed his attention to the east and gazed intently toward the "Clearing" as if he had seen the pheasant there, or had just remembered that he might be there. He now began a cautious stalkin that direction looking and listening carefully. Finally about 4:20 he reached the fence and came down to the street; then crossed to the Scamells', ignoring me. This was all wrong! I joined him and, at 4:30, he went up into the Scamell oak: his first known roosting place. He did not relax, but stood on a limb, tail unsupported and gazed off to the west. About 10 minutes later he shifted a foot or to the exact spot which he had used as a couch so long.

Disappears.

Find him in regular roost.

I supposed he was settled for the night, but after chatting a few minutes with Dr. Scamell, had another look to verify his presence only to find that he had disappeared silently. After looking in the Canary pine and other trees at the Scamells' I went to his regular roost tree on the west lot and found him installed in his house after all, about 5 P.M. Now I wonder what all this means.

October 30th.

R in his house at noon.

Rain during the night (?) and in the forenoon. At noon I looked up Rhody, finding him still (or again) in his house in the roost-

Rain causes
him to sta
"indoors"?

tree. He was not especially prompt in sailing down on invitation, but when at last he did, it was seen that he was absolutely dry, and in fact, when he shook himself, a small cloud of dust floated away.

The evidence, therefore, supports the probability of this having been his first public appearance for the day, in which event, the rain would seem to have been the controlling factor in keeping him so late in his bunk. There was no wind and the temperature was mild.

Of course whatever caused yesterday's divergence from form may have had something to do with it.

About 2:30 P.M. he was at his post on the west lot and came over the fence on call rather reluctantly to get his second mouse for the day. He would not come up into the garden farther. (On account of the pheasant's still being present, though out of sight?)

Incidentally this pheasant is beginning to tag me about and twice, on seeing me, has come partly running and partly flying without my having made overtures to him.

No thrasher song heard during the day.

October 31st.

The rain, only about 4/100 of an inch total for the 24 hour period, ceased about noon yesterday. Today was summer-like.

No thrasher song heard during the day.

R not in house
at 9:30 A.M

R and pheas
ant toler-
ate each
other.

Rhody was not in his house at 9:30 A.M., did not use his observation post on the west lot much, and was not seen inside the fenc until about 2:30 P.M., when he appeared in the garden and followed hopefully to the mouse abode. The pheasant was 20 or 30 feet away and R appeared to disregard him, until that bird sauntered up to us to observe affairs, Rhody as it proved, being the attraction. He came to within 6 feet of Rhody and seemed satisfied. Rhody crouched momentarily facing the pheasant, then began to wipe his bill on the fallen leaves and the two birds drifted apart indifferently. There was no evidence of real hostility on the part of either bird.

During the day it was learned that the pheasant belongs to Dr. Morse whose home is 200 yards or so to the west and lower down in the canyon. At present the bird is sleeping at night in the oak at the south-west corner of the living room.

November 1st.

Summery weather continuing.

Early thrasher
song.

In the early morning, beginning before sunrise, which is "officially" at 6:35 A.M., the thrashers were singing loudly west of the house. Singing ceased by 8 o'clock.

Increasing
tolerance o
R and P?

Although the pheasant is still conspicuously occupying the garden, Rhody came for his meat and was sunning himself near the glade at about 9:45 A.M. Perhaps the two birds now realize that neither is a source of danger to the other.

Rhody
gathers an
audience.

10:50 A.M. I looked up Rhody a few minutes ago and was guided by the scolding of Bewick wrens and Plain Titmice (titmouses if you prefer) to the pine near the cage. Here R was sitting beneath it on a wood-pile gazing interestedly up at his inquisitors, amongst whom it was now observed there were red-breasted nuthatches and golden-crowned sparrows also.

My arrival upon the scene was greeted with raised crest and cocked tail and indications of interest in mouse prospects. Accordingly I proceeded to the mousoleum followed quickly by Rhody minus his escort, but wrentits now took up scolding in their stead.

After eating his mouse Rhody lay down on a rock at the hedge by the tool-house: a place he began to be interested in as his interest in his favored oak branch nearby began to wane a week or so ago. Since the arrival of the pheasant, up till now, he has not been using this place.

12 Noon. He is still there lying comfortably in semi-shade.

12:30 He is still there. I had to leave for the rest of the afternoon.

The pheasant again slept at night in the same oak.

November 2nd.

Rhody not behaving precisely as anticipated.

Rhody is diverging from anticipated behavior in that he is not at present sticking closely to the west lot.

At 8:30 A.M. I found him sunning by the "old man" near the glade. He wanted no mice, and a few minutes later when he went to the cage, he ignored the meat and went over the north fence. He joined a flock of quail feeding in the baccharis thicket on that slope and moved about amongst the birds freely without alarming them in the slightest. For the half hour or so that he was with them there was neither sound nor movement on their part that indicated unrest due to his presence. When he came out to lie in the shade of a pine and gaze off to the north-west I left him.

R and quail

He seems to have remained somewhere north of this place until about 2:30 P.M., when he was found waiting at the door of the tool-house for his mouse.

Roosting time. Delayed?

At 4:15 he was not in his house in the roost tree and there was no sign of him elsewhere--another departure from anticipated behavior.

The weather was warm and sunny. (Max. 70°).

Although the pheasant was about all day and friendly, he could not be found anywhere after dark.

Nov. 3rd.

Thrashers away? No thrasher song this morning or yesterday. Summery weather continuing.

Pheasant gone. No sign of pheasant up to 11:15 A.M.

R finds me.

Rhody, who was not seen earlier, although looked for, presented himself before me in the garden at about 10:30 A.M. with saucy movements of head and tail. He received a mouse and later ate his meat at the cage.

R again unfindable at roosting time.

At 4:15, again, he was not in his roost and he was not findable despite a search through the undergrowth of the west lot inspired by scolding of wrentits and spotted towhees there, whom I suspect of having located him, as perhaps they had; but I couldn't find him.

Still absent. 5:35 P.M. (Temp. 67°; sunset 5:10). Rhody was still not in his regular sleeping place; neither was he to be found in either of the only two other known places formerly used by him: the Scamell oak or the Scamells' Canary Island pine.

November 4th.

R not sleeping in regular roost?

Rhody was not in his house at 7:30 A.M. and not in sight elsewhere.

At 9:30 I came upon him sunning at the sage patch by the glade. He had already eaten his meat at the cage, but was pleased to catch worms tossed to him. (Temp. 57°, slightly hazy, light breeze from the north).

One thrasher comes; eats berries--unusual here.

No sounds of thrashers up to 10 A.M; but a little later one bird came to the oval lawn without a sound and ate pyracantha berries as greedily as a hermit thrush--an almost unprecedented action for a thrasher here, since with rare exceptions, they do not touch berries, here.

R stick close to home.

RHODY'S NEW ROOSTING PLACE FOUND.

Rhody does not seem to have left the place at all until bed-time. He cleaned out his meat dish at the cage three times and had one mouse. About 3:30 P.M. I began to watch him rather closely, as I thought it probable that he would not go to his regular roosting place. I suspect that he may have been attacked there by a hawk as he was going to roost, or possibly by a horned owl while in his house The Cooper and sharp-shinned hawks are now here for the winter and have begun their raids through the trees and shrubbery. (I shot a Cooper hawk this week from the kitchen window). Horned owls are now being frequently heard at night also.

Locating it.

In eucalypt.

About 3:45 Rhody, who had been sunning at various points near the glade for hours, began his westward march along the path that leads through the orchard and I followed. But he was still near the glade when he crawled under the fence at the top of the bank into the "chaparral" of the slope. He began to look up into the trees as if considering roosting in one of them. Finally he selected a eucalyptus (E. amygdalina, " peppermint gum"), went up about ten feet and sat for several minutes quietly in one place. He then began to look higher and gradually moved up to about 20 feet and tried various places, none of which seemed to suit, presumably partly because they had no tail rests. Finally he jumped across a space of three or four feet to the adjoining tree of the same kind and, after several trials, found one where there was support for his tail. There he settled, about 4:15, presumably for the night.

This is it.

5:00. He is still there.
7:05 " " " "
Evidently this is the place.

Several new "firsts" for Rhody.

This is the first time that Rhody (a) has been known to select a night roost inside the property lines of this place; (b) has been seen to take a fourth roosting place; (c) has been known to roost so high.

Comment on new site.

This tree is of the tall, slender type and it will he whipped around in high winds, especially those from the south-east in the winter. It also offers little if any protection from rain. It is, further, in a very public location, being practically at the sidewalk and the street in front is a gathering and lounging place for dogs.

However it does offer three of the cardinal features which seem to be indispensable for a roadrunner night roost:

1. An extended view over a wide area near at hand,
2. A clear passageway through the air to a landing field close by. In this case, as in the three others, the landing field begins at the tree itself.
3. Unobstructed view of the sun at sunset--in the present instance only when the sun is setting well south of west.

Nevertheless it looks like a poor place for a roost and I doubt if he will keep it.

November 5th.

Rhody sticks to his new roost.

Rhody was still in his new roost at 8:15 A.M. (Sunny, temp. 56°). At 9:20 when I drove by he was still there. On my return Julio informed me that Rhody had come up the driveway from the outside about 10 o'clock and had had a mouse.

With the shift in his roosting place he seems also to have resumed his loafing here, abandoning for the time being, at least, the west lot.

Home all day?

Returning from down town at about 3:45 P.M., I found him again in his new roost. Apparently he has not visited the west lt at all today.

Nov. 6th.

Rhody gets up late.

Rhody was still in his new roost at 7:45 A.M. (Sunny, temp. 52°).
Ditto: . . . . .9:05 "
" . . . . .9:30 "
" . . . . .9:45 "
" . . . . 10:00 "

I now watched him continuously. He was not in sleeping posture; but, as ever since 7:45, was perching quietly aware of all passing events.

Rising time. Choice of landing is unexpected. Skilful navigation.

At 10:50 precisely he came down several branches and faced toward me where I stood in the orchard about 20 feet from him. I had expected him to take off due south and use the street or the lot beyond as a landing field. Whether my presence influenced him or not I do not know, but, after carefully sizing up all the obstacles between us he launched himself in full flight directly north toward me, passing through an opening in a tangle of acacia, wisteria, peach and climbing rose branches just large enough to clear his wing tips and landed at arm's length from me on the terrace against which I was leaning. Here, again, due to peach and lime branches there was little clearance.

Sudden disappearance.

I turned toward the tool-house expecting him to follow, but in a matter of seconds he had disappeared utterly and for exactly 26 minutes I looked for him over a radius of about 100 feet, finding him only when he chose to appear in the open by the sage near the glade. In the meantime he had visited the cage and eaten the meat, but when I now suggested a mouse, he was pleased to trot along the driveway another hundred feet behind me to the tool-house and take the mouse from hand. He now returned to the bank to rest within a half dozen feet of his landing place--another one of his favored spots.

Speculation re reasons for long time spent in roost at this season.

As a matter of fact, bearing in mind that the mating season is over and there is no courting or nest-building or care of young to engage his attention, and that his moult no longer demands any physical activities on his part, and that he does not have to search for food and drink and that his own safety and personal comfort probably form his chief preoccupation, there is nothing else for him to do but loaf someplace after his bodily needs are attended to.

Except in case of actual attack in his roost or threat of danger when there, there seems to be no necessity for him to leave it at all except for the short space of time required to attend to his bodily wants. Once these are satisfied there seems no reason why he should not either go back to his night roost again or else wait in some other safe and comfortable spot until his food requirements for the whole day are pretty definitely satisfied and then go to his night roost.

Again, this is the beginning of the season when predators become

very active locally, hence unnecessary exposure in the open is to be avoided. (I have noted an increasing tendency for him to run across open spaces recently). Further Rhody may reasonably be considered now as at least semi-domesticated.

Long hours in roost not believed hibernation phenomenon.

Taking all this into consideration, it does not seem necessary, in the case of this particular individual, to regard his early retirements and late risings as induced by somethingakin to hibernation

It would be instructive to know what perfectly wild road-runners do at this time of the year and the next few months.

At 12:55 P.M., with the aid of the wrentits, I located Rhody in the glade. Although I was on the far side of it from the tool-house, he came quickly over to me without invitation with that bright, expectant look he assumes in anticipation of favors. He followed promptly to the mouse abode for his second mouse of the day. His first was rather small.

Response to towhee alarm.

He now went to the sage-patch to lie in the open but near a bush. One single mew from a spotted towhee out of sight perhaps 50 feet away causedhim to look quickly in that direction, step under the bush and look and listen intently. After 15 minutes he shifted to the upper side of the entrance driveway where there was better protection from above and was still there when I drove out at 2:30.

Again in new roost.

On my return at 4:30 he was already in his roost in the eucalyptus tree.

Thrashers silent.No thrashers seen or heard today.

Speculation on Rhody's sudden aberrant behavior.

This sudden change in roosting place has also been accompanied by abandonment (up to the present) of the west lot as a loafing place and resumption of all-day idling in a rather restricted area inside the property lines of this place. It is as if the former roosting tree and all the surrounding area of the west lot had suddenly becom tabu. Whether this attitude toward formerly preferred associations will persist or not still remains to be seen.

There has been little change in weather conditions--such as has occurred: a slight shift toward the cool side--rather favors his staying where he was, in order to have the protection of his house at night and the sunny slope of the south side of the lot in the daytime.

Of course it may be that he merely wanted to change for the sake of a change,but, as the notes show:

Hawk raids are increasing.
Horned owls are being heard more frequently.
He now runs across open spaces more often than he walks
He sought cover today at one mew of a towhee.
In descending from his roost this morning he did not use the obvious landing field, but took a difficult course through the air to land in a protected area.
And in that area, although the landing was at my elbow, I could not find him for 26 minutes.

At present, therefore, I am inclined to the view that action of predators accounts for his deviation from anticipated behavior, and I shall not be surprised if he shortly returns to his house in the roost tree at night and again uses the west lot as a loafing place during the autumn and winter.

Nov. 7th.

Thrashers again heard in various directions. Little song--mostly scrips and queelicks, which calls seem to be about the only notes distinctly recognisable as common to all adult California Thrashers (by me).

At 8 A.M. Rhody was still in his roost in the eucalyptus in the warm morning sun. This factor of early sun is one of the points of superiority that this place has over his house, and it may be that it has influenced him.

At 9 A.M. I had just started to open up the air route from his present roost to his yesterday's landing place when he came down several branches and again inspected surrounding with a view to using the same course; but he decided against it and climbed down still lower and dropped close to the base of the tree. From there he went to the cage and cleaned out his dish, as I found a half hour later when I went to look for him. It was not until 10:20, after visiting and revisiting all the likely spots I could think of, that I, quite by accident, spotted him in the upper annex of the cage. I sat down outside and watched. He soon came down and into the outer cage where he took up his old game with the magpies(for the first time noted in many weeks) but it was observed that he kept an eye on me nevertheless. In a few minutes I raised one hand to head-height in a quick gesture and he instantly came to the wire and watched me keenly. I got up and moved toward the tool-house and he dashed out of the cage to follow all the way and take a mouse from hand.

About 2:30 a visitor wanted to see him, but he could not be found. As soon as the visitor left, however, Rhody made his presence known and had another mouse. I think he was aware of our presence and was just waiting for the visitor to depart.

He appeared to remain on the place all day, not even visiting the west lot and when looked up again at 4:15 was already in his new roost.

Nov. 8th.

Rhody was already up at 9:30 when I went to his roost tree. The day was overcast up to about 3 P.M., a hawk had been raiding through the trees and Rhody kept out of sight most of the time. He wanted no mice, but cleaned out his meat dish twice.

At 3:15, when I went to his new roost tree he was already up in it though not settled.

A lone thrasher was about all day, at one time deliberately walking up to within 8 feet of me in the open where I sat at the oval lawn as if expecting food from me. He walked off unhurriedly before I could get my worm-box into action. He was seen frequently during the day. He was not heard to utter one single sound. I could not identify him with any of the birds I know. He had no leg-band.

Nov. 9th.

A mild sou'easter began blowing in the night, giving Rhody a sample on a moderate scale of what he must be prepared to look for if he continues to roost in the eucalyptus.

He was in the tree at 8 A.M., swaying about, but holding on manfully. About 8:30 he came down and remained on the place all day, having three mice as well as meat.

About 4 P.M. the wind had increased, but Rhody again chose the eucalyptus.

Meanwhile I had started a new house for him to be placed in this tree but could not get it finished in time to try it today.

Nov. 10th.

The sou' easter, not one of our worst, kept up throughout the night and was still blowing at about 8 A.M. when I went out to look for Rhody. He was still in the tree swaying about in an arc of 2 or 3 feet and directly exposed to the wind himself. He hung on until, by exhibiting a mouse, I got him to come down. He must have had a miserable night and if the wind keeps up I doubt if he will try the tree tonight, although I shall place the house in it. (Temp. at 9 A.M., 58°),

3:45 P.M. The house was placed finally about 2 P.M.--quite a task up in the tree in the strong wind.

Rhody remained on the place until about 3 P.M., eating no meat and having but 2 mice. The wind bothered him.

About 2:30 I was able to watch him. He began to wander about looking up into various trees and also examining the interior of the lath house, evidently considering the possibility of finding a roosting place out of the wind somewhere near the north boundary where there was somewhat of a lee.

He gradually drifted down into the orchard and along the south fence, still looking for a roosting place, as I think. He passed right by the eucalyptus, not even considering it. (After all my work!) I do not think he even saw the house, but after his last night's experience, had decided to look elsewhere. Now he climbed up into a small pine at the south fence and tried various places in it. No use--wind too strong. He considered another pine a little farther west. Gave up this idea. When he arrived at the side gate he went out, as was formerly his custom, and headed for the west lot, examining all the prospects en route. When he reached the eastern line of the lot he stopped and "thought"; rejected the plan of going back to his old roost tree and went across the street to the Scamells', going up into the oak and trying 4 or 5 different places. I left him there at 3:35; but whether settled for the night or not, I do not know at this time. He was not lying down.

5:08 P.M.

At 4:58 Rhody was not in the Scamell oak, nor was he in either the old or the new house. I do not know where he is; but, of course he is easily overlooked. (Sunset 5:03).

Nov. 11th.

Frequent rains during the night, with occasional heavy downpours of short duration. Just the time when Rhody should have been in one of his houses!

9:30 A.M. Well, I found Rhody in the Scamell oak after all. There seems little doubt of his having been there continuously since 3 P.M. yesterday. I must have overlooked him at 4:58--nothing easier.

When I talked to him he sailed down and ran hurriedly to the west lot--the first time he has been known to go there since he left his house there. He began to sun himself in the "open" pose; but a an accipiter flew overhead and he concealed himself. Thrashers were scripping nearby.

He was not seen at his post during the day and he did not appear here either for mouse or meat.

Rhody back in old house.

On my return from an absence of several hours I found him back in his old house in the roost tree on the west lot at 5:03 P.M.! So last night of rain and the night before of wind seem to have overcome whatever the state of mind was that has caused him to desert his regular sleeping place.

Hawk passes near.

As I looked intently to be absolutely sure of his presence a Cooper or a Sharpshinned hawk darted past his house less than 20 feet from it and on the same level. It was the turning of Rhody's head at the same moment to watch the hawk that revealed his presence

Nov. 12th.

Rhody, back to ormal?

At 9 A.M. (sunny, mild) Rhody was not in his house, but when I called, he came out of the brush, cried with lowered head, and advanced to receive his mouse. After a sojourn of an hour or so, at his old-time post on the west lot, he called at the cage and ate his meat, although the mouse had been a big one. Being otherwise engaged most of the remainder of the day, I did not observe him often; but it was noted that he back again at his observation post and Julio reported that he occupied his old house during the night.

R occupies regular house

Nov. 13th.

Lots of thrasher song.

From somewhere between 6 and 7 A.M. until about 8:30 the thrashers were singing close to the house. Three different birds could be distinguished--one of them a bird that frequently uttered the same musical phrase 4 or 5 times in close succession; but it was not the same phrase noted several days ago and commented upon in these notes.

R at post. Eats mouse and cricket.

As I drove by the west lot about 10 A.M. Rhody was at his post and came down the bank to receive a Jerusalem cricket and a mouse. The former he gulped down, kicking and clawing, without taking the time to divest it of any of its hooks and claws. I had carried this creature in the same container as the mouse and it had lost no time in coming to grips with that animal. The mouse, frightened, made efforts to escape and the two creatures became reconciled to each others presence before meeting their doom in the craw of the roadrunner.

R eager for econd mouse. Gets big one

At 2:20 P.M. I looked for Rhody in the garden, calling. In a few seconds he came running out of the glad, crest erected and very much aware of my importance in his cosmos. He took no chances on my overlooking his presence and kept in close touch all the way to the tool-house, where he was given a fawn-colored mouse so large that its hind legs waved from the corners of the bird's mouse for several seconds before a heroic effort by Rhody finally got him by the critical point. (Sky becoming overcast). (Temp. 62°, slight breeze from due south).

Not in regular roost.

At 3:50 Rhody was not in his regular house.
" 4:15 " " " " " " " , neither was he in the Scamell oak.

Find him back in eucalypt-tree, but not in house

At 4:20 I examined the eucalyptus tree, although, in view of the rising wind and threatening rain and his abandonment of that tree, I did not expect to find him there. But he was! He was sitting in sleeping posture on one of the supports of the new house, as if he intended to stay there all night. This support is a 1" x 2" horizontal piece of board fastened under the eaves of the house with both ends resting in forks of the tree. One of these forks was R's chosen roost when he used this tree.

Rain begins.

5 P.M. He is still in the same place and the first drops of rain have just begun to fall. He has to move only a foot or two to be in complete shelter in the house. Will he do it? Think not.

At 5:15, raining briskly, R"sitting tight". It is now dark and owing to typical road-runner reluctance to move about in the dark, I expect him to stick where he is despite the rain. Further, I doubt very much if he realizes that he is actually sitting on a house. The house proper is all below him and it has been his habit in approaching his roost in this particular tree to move into the crotch from above, so it is not impossible that he has failed to recognize the structure as a shelter.

10:20 P.M. Still raining. I have just returned from a look at Rhody. He is still sitting where he was last seen, exposed to the wind and rain. Nature, of course, has equipped him for this sort of thing and, I suppose, he is actually quite unconcerned about what, to a human being, would be a real hardship. Probably only the outer surface of his feathers will be wet and he will be dry and dusty underneath in the morning.

Nov. 14th.

Thrashers singing in the rain.

A confirmed habit.

At about 7 A.M. it was raining heavily, yet thrashers were singing continuous full-song--a habit of theirs frequently observed here. Since the first rain of the present season I have given some attention to this phase of their behavior and, without having made rigorously precise observations correlating rain and song, it may be said that, in general, the dry spells between rains have been characterized by falling off or complete cessation of song at this place during the period following the "convention season", and that after each of the three or four rains we have had since then, there has been marked revival of song. Whether the rain has anything to do with it I do not know, but I think it has.

In this connection I am reminded of the observation of Hoffmann (Birds of the Pacific States) in regard to the song of the California Thrasher:

Hoffmann's comments on thrasher song.

"In almost any month of the year, and regularly and freely after the winter rains, the California Thrasher's song rings out from all the chaparral-covered slopes, or from the thickets along streams."

At 8 A.M. (Julio) Rhody was still sitting in the same place in the pouring rain.

At 9 A.M. I saw him still there.

At 9:30 he was at the sage near the glade with wings slightly spread, drying himself. (The rain had ceased). He seemed only superficially wet. When I went up to him and spoke to him, he greeted me with softly-rattled beak, instead of his whine, and trotted along behind as I turned toward the tool-house, where he took a mouse from hand.

After 9 o'clock there was no more rain during the day and the sky was clear, weather mild.(Max. 62°,min. 52°).

No effort was made to keep in touch with him during the rest of the day, except after sunset, when I was unable to see him (possibly on account of its being too dark) in any of his known roosting places.

Nov. 15th.

The day dawned with clear skies, mild temperatures, calm.

Thrashers were again singing, but not nearby.

At about 9:30 R was not in any of his known roosts, but a little later, he came for his meat and adjourned to his post on the

west lot, where he was indifferent to my calls from the fence at the clearing. Later he again came up for meat and hung about his usual loafing places until time to go to roost. He wanted no mice at all.

About 4:30 P.M. I looked him up and found him again sitting by at the new house in the eucalyptus. Although it was sunny I nearly overlooked him, and it is possible that he was there last night, but missed in the darkness. He _is_ hard to see!

8:30 P.M., partly cloudy, calm, temp.56°. Well, he is still there. Now I would like to know what he means by this recent indecision in regard to roosting sites. Also what is the matter with this new house?

Nov. 16th.

A small amount of rain during the night.

Rhody tries his new house.

A.M.
At 8:50 Julio reported Rhody not to be seen in the eucalyptus, so I went and had a good look, verifying the observation, but finding that Rhody had succumbed to the temptation of the new house and was stowed away in it comfortably at last!

At 9:20 he was not there, but a slight sound at my feet caused me to look down and he was "circulating" around them. This meant mouse, so we proceeded to the tool-house where he was rewarded with a big one. (Cloudy, raining slightly, 56°).

But returns to old one for the night.

This seems to have been all he wanted from me during the day. At 3:30, beginning to rain again, I found him apparently finished for the day and settled for the night in his _old_ house after all. What is to be expected next?

Nov. 17th.

Fine last night and today.

He came for his meat before 9:30 A.M., and for his mouse about noon. After loafing in the sun on the bank which bounds the orchard on the north he adjourned about 2:30 P.M. to the group of peppermint gums where his new house is. There he sat for a long time and, at 4:15 P.M. when I looked him up again, he had retired for the night on the same support of his _new_ house that he first occupied. What is that is influencing his choice of roosts at present?

R again roosts on support of new house.

A strange thrasher.

new.

This morning when I looked down from the top of the bank above mentioned to see if Rhody was there, a thrasher was sitting there less than ten feet from me, on the ground, perfectly motionless. For about 5 minutes we stared at each other. During that time he was seen to wink once, and that was the only perceptible movement he made. I went and got some worms. He still had not moved. I tossed him several, but my shots were bad because of interfering foliage. He must have seen them, but he made no move for about 3 minutes more, then wandered off casually. I could see no band on him. I trailed him from one place to another for 30 minutes longer, but he would always, without appearing alarmed at all, shift to the other side of the bushes and begin digging when I got nearer than about 10 feet. In this way we went around the sage patch near the glade several times. I was the first to give up as it was impossible to get a good look at him in the open. I could not identify him.

9 P.M. Rhody still in same roost.(Crystal clear, full moon, dead calm, 51° plus). He doesn't mind me turning the flash-light on him at about 15 feet distance. He doesn't move.

Nov. 18th.

Thrashers singing from somewhere about sunrise to about 8 A.M. The same yesterday, though not recorded at the time.

R in roost.

At 8 A.M. Rhody was still where last seen. (Sunny, calm, 55°) At 9 o'clock I could not see him from my side of the fence, so went down and out to the street. He had moved to the adjoining tree in order to get more sun. The two McCullough dogs rushed out as usual, making a tremendous uproar, then subsided and camped in the middle of the street, also as usual, 20 or 30 feet from the base of Rhody's tree where they are prepared to greet everything that passes during daylight hours (and sometimes well into the night) with similar demonstrations. It is one of these dogs that I suspect of having "detailed" Rhody last year and I am surprised that he should have selected a roost tree where he is subjected to this almost constant turmoil, not to mention menace, when he descends to the street or sidewalk. Maybe he likes the noise, and the action he can observe and not be a part of. If so, it is a new phase in his behavior.

R's dog "friends"

Does R like this noise and activity?

After visiting Rhody I turned back to the entrance along the sidewalk (about 150 feet east) and waited. Soon Rhody sailed down magnificently directly along my course, leaving the dogs to starboard and finishing up with a swift run on the sidewalk until he overtook me. We then proceeded up the driveway to the tool-house for the mouse he had in mind. This business finished, he went to the sage patch to rest, but instead of lying on the ground there as usual, he elcted to perch about half-way up in a twelve foot sapling redwood which had been planted there, creating a roadrunner-redwood association rarely encountered in the field.

A few minutes of this and he crossed over the entrance drive to sit in the bushes on its upper bank. Here he remained for more than three hours, then chose the top of the cage as his next location. On invitation, at 1:35, he followed to the tool-house for another mouse and was hungry enough to cry for it.

As far as I know, since some time before 4:15 yesterday, he has not been over 50 yards from his night roost. Not an excessively active bird at this season.

Up to 3:45 he was not at either of his roosts.

Rhody back in old house again,

At 4:50 I found him in his old house for the night. He was settled so low in it that I had to climb the bank the bank in order to see him, and then was not certain until he raised his head in response to call. (Sunset 4:56, but already dark due to heavy clouds)

At this time thrashers were singing in the garden. I have ~~no~~ not been favored at this hour often since Brownie was killed.

Nov. 19th.

A little scattering thrasher song nearby early in the morning.

Rhody still in bed at 10 A.M. (Julio) but not at 11 o'clock. At this time sky heavily clouded, wind from south-east, temperature 60°, rain anticipated at any moment. Rhody invisible, meat untouched.

At 11:35 a Cooper hawk passed close to my head and perched about 30 feet away on a branch overhanging the driveway, turning its head to look back at me fearlessly, then moving to another tree by the fornt steps as I moved toward the house. When I came out with a gun it could not be found. All birds had sought cover.

4:33 P.M. Birds have been very scarce about the place today,

perhaps on account of the hawk. Even the ubiquitous quail have not been seen and Rhody appears not to have come inside the place at all. Curiously, however, a thrasher has been glimpsed here several times.

I looked in Rhody's various roosts several times, but did not find him until 3:45, when he was in his old house. I doubted if he had enough to eat today, so went up the bank to his tree and began to talk to him. He stretched his neck out to its full extent and scrutinized all of the terrain in the vicinity of the tree and finally sailed past me down to the street; but he doubled back [illegible] promptly, ran up the bank and threaded his way through the bushes to me without hesitation. Unfortunately I had no mice, but I gave him all the worms I had. He was hungry and searched carefully for all of those that had dropped amongst the leaves; he was still hungry.

So I went back to the house to get a mouse for him. On returning to the tree he could not been seen anywhere. Calling [illegible] brought him out of the bushes from the direction of my house. (Was he on the way there to look for me?). He ran to me for the mouse--a big one--and gulped it hurriedly.

He was now satisfied and ready to return to his own house. He went up through the ladder tree and, in 4 minutes, was settled in his bunk. Still cloudy, but the expected rain not yet here (62°).

For him to leave his house after going to roost prepared to stay the night is a rare occurrence. I have no recollection of ever having succeeded in getting him to come down at such a time before; but it may be that it has happened. (The notes will show).

In the present instance it was undoubtedly hunger that was the inducement and I am inclined to think that fear of the hawk kept him from coming here for his usual rations and caused him to remain in cover all day.

Nov. 20th.

There was early morning calling by thrashers and short snatches of song.

Rhody has breakfast served to him in bed!

The rain managed to hold off until about 10 A.M. and then it fell in torrents and is still (11:30) falling heavily, without wind. Rhody has very sensibly stayed in bed and Julio, who is devoted to him, has just "handed" him a live mouse on the end of a pole, so R has, for the second time (the first time was unrecorded) experienced the luxury of having breakfast in bed! After eating he remained there. Julio says Rhody was not at all frightened by the pole contraption and reached for the mouse eagerly. The arrangement consists of a bamboo pole with a small basket-like affair on the end not much bigger than a mouse. The living animal is placed in the basket.

There was not much rain in the afternoon, but Rhody appears not to have left his house at all during the day and, at 3:30, Julio served him another live mouse as before.

Nov. 21st.

1:30 P.M. No rain as yet today--alternate cloud and sunshine At 9:30 A.M. Rhody, who had but a few minutes earlier left his post on the west lot in response to Mrs. Scamell's call, was sitting in an acacia on the south bank near the clearing. When he saw me approaching he cried, but took his time about coming for the mouse, looking at everything else but the mouse until he suddenly decided to grab it. He then retreated to the same tree he had been occupying. Four hours later he was still (or again) in the same place working industriously on his feathers and not interested in me at all.

Thrashers.

Thrashers were first heard singing about 6:45 A.M., in various directions, mostly to the west. About 10:30 I attempted to get into contact with them. One of them was approached to within 20 feet near the west window of the living room and proved to be Longbill, who has the most exaggerated length of bill of any thrasher ever seen at this place. Longbill was scripping and uttering short musical phrases, apparently in order to keep in touch with another thrasher singing volubly further down the slope perhaps 150 yards away. This other thrasher was the one that repeats its phrases so many times and, although not seen, was thought to be Broken-wing.

Rhody and hawk.

I went back at 2 P.M. to see Rhody again. A hawk flushed from a tree 20 feet from me as I approached. This was 40 feet from Rhody, who showed that he had been aware of the raptor's presence. I now invited R to follow to the tool-house and he responded this time, but in unaccustomed fashion, running and flying parallel to my course until ahead of me, then waiting until I had passed him , then repeating until we reached the mousery where he keenly scanned the surroundings with displayed skin-colors, but accepted the mouse. The impression gained was that his antics were due to fear of the hawk and that he recognized the journey as hazardous, hence made it in short dashes at high speed as much under cover as possible. As hawks are bad now, it seems probable that his long stay in the acacia on the bank--not one of his accustomed haunts--may be accounted for by the presence of these birds.

(It should have been recorded in connection with the above thrasher note that, shortly after their song ceased, an accipiter was circling over the area which they occupied).

On the basis of Rhody's behavior,as above set forth, it was thought quite probable that he would roost in the eucalyptus this night (instead of exposing himself to the hazards of the journey to his accustomed roost). Accordingly he was kept under observation at intervals.

At 2:30 he went up into the companion tree of the one in which his new house was installed. (As in the case of his regular roost tree he has, when roosting in the gum tree, also used the adjoining tree as a "ladder").

By 3:15 (next observation) he was located in sleeping posture on the support of the new house.

At 4 he was still there.
At 5 " " "
9:30 P.M. Rhody is still there. (Clear, calm, temperature 60°).

Nov. 22nd. (Sunrise 6:57, sunset 4:54).

Thrashers singing and calling close by to the west.

At 8:50 A.M. Rhody was still there. (Cloudy, temp. 59½°).
" 9:50 " " " " " " " 60 .
" 10:00 " No change.
(It should have been recorded that, while he was still in the same location at 8:50, he was not in sleeping posture, but was sitting up with tail hanging down).
At 10:15 no change in bird or weather; no interest in me.
" 10:30 Ditto.
" 11:15 "
" 11:40 " , except temp. 61°, slight S.E. breeze.
" 12:28 I went to his tree and found he had left, gone to the cage and eaten 4 pieces of Hamburger. He had also left droppings on the

driveway containing plentiful quantities of mouse-hair. At 12:40, after several minutes' search I found him sitting about 10 feet up in the adjoining tree. He wanted no more food.

Rhody casts pellet.

As I talked to him, he shook his head, looked down and I heard something drop upon the dry leaves near me. Search revealed a fresh pellet covered partially with a fine froth. To the eye it appeared to be all mouse-hair. It was preserved.

Dawson, Bryant and Sutton say no pellets.

Both Bryant and Dawson say that the road-runners do not cast up pellets. Sutton says his pets, Oberon and Titania, did not. Probably longer periods of observation on individual road-runners feeding largely upon mice would have yielded the same results as my observations on Rhody, Archie, Terry and Pepper, all of whom cast up pellets of mouse-hair, but spaced at long intervals of time.

Further comment on present pellet.

In the present instance little effort was required and it is worth noting that, although Rhody had eaten heartily of meat within the hour, no meat showed in the pellet. Also, he had had no mice today. Further, except for the meat, the evidence is pretty conclusive that he had had nothing to eat since a little after 2 P.M. yesterday, and certainly no mice .

These notes have suggested, bearing in mind that mouse fur is always voided plentifully with the excrement and that pellets are disgorged only at long intervals, that the road-runner may be "sick", in the sense of being unwell, when it resorts to this method of getting rid of the accumulation of fur. Also it may be "sick" in the sense of being nauseated. The fact of Rhody's remaining so long inactive on this occasion, though fully awake, may be an indication of discomfort within his internal economy, although the simplest explanation is that there was "just simply" nothing else for him to do.

It now remains to be seen whether his retreat to the tree means that he is going to bed early.

men

1:45 P.M. Well, Rhody is a surprising creature. At 1:30 I found him sitting quietly in exactly the same spot where he cast the pellet, but this time, when I stood near him, he began to look down at the ground for a good spot upon which to light and when I moved off sailed down and trotted along behind me on the sidewalk to the entrance, where he stood quietly beside me while I explained to two delighted who came out from behind a truck to look at him, who he was, where we were going and what Rhody's aspirations at the moment were. When I started up the driveway Rhody found the pace too slow to express his exuberance of spirits and, with raised crest and tail colors displayed, made fancy excursions to right and left, arriving at the door of the tool-house in a dead heat with me. He was full of pep and gobbled the huge, black mouse handed him with alacrity. Evidently the clearing out of his pipes did him good and left space that needed filling. All this was totally unexpected. I had thought to find him finished for the day.

At 3:15 I found him in sleeping posture on the support of the new house in the peppermint gum tree. My guess had been that he would occupy his old house, but he fooled me.

Several observations at irregular intervals until dark showed him still there.

At 8:25 P.M. he was still there, the tree swaying somewhat in the southerly wind, which has freshened a bit. (Cloudy, 59°). I don't understand this animal at all!

Nov. 23rd.

Rain during the night. Trust Rhody in his present aberrant mood, to have selected the wrong night in which to sleep out!

Thrashers were heard during the early morning hours.

At 8 A.M. Rhody was still in the same place. Not raining.
At 9 A.M. he was out of his roost by the sage patch only slightly damp outside. When he exposed his under-feathers they were seen to be dry.

He had not eaten anything from the meat dish; did not want a mouse and merely rolled his eyes at the worms I tossed him; although he seemed cheerful and friendly.
By 9:40 he had changed his mind on the mouse question and trotted along behind me to the usual place. This mouse, a light gray hýbrid, had to be slapped on the ground several times before it was sufficiently subdued to be swallowed.

Rhody now appeared to be perfectly dry, as did all the other birds casually noted: quail, brown and spotted towhees, hermit thrushes, juncos, linnets, golden-crowned sparrows

Now followed a period of several hours during which almost no birds were to be seen (including Rhody). This was due to the presence , which I accidentally discovered, of a hawk, lurking in the trees and shrubbery. When it left the birds reappeared.

Rhody loitered about the orchard close to the eucalyptus tree in which he has been roosting, most of the afternoon, usually standing quite still and wanting no food of any kind. He had not eaten his meat. I made several attempts to interest him in mice (though I had none with me) to no avail. At 3:30 he was sitting close to the wire, just outside the fence, but would not come in. However, when I made a quick gesture with a hand exactly as if tossing a worm to him, he immediately slipped under the fence and came and stood in front of me without looking to see if a worm had actually been thrown upon the ground. (I.e. he apparently recognized the gesture and was aware that no worm was thrown). He wanted only three or four and refused to pick up two or three under his feet, although he craned his neck to look at them.

He now stood still looking at me for several minutes, then decided to go back through the hole and climb the tree that serves as a"ladder tree"for this roost, first, however, "dusting" on the damp walk on which there was no dust.

(There is more in these two paragraphs than appears on the surface).

At exactly 4:08 he was in sleeping posture on the house support. (Cloudy, calm, 57°; sunset 4:53). A late retirement.

Nov. 24th.

A little thrasher calling and singing beginning before sunrise.

Rhody not up at 7:45, 8:45 , but came down at 9:50, wanting no food. (Sunny, mild.) At 10:15 he was sunning himself on the bank near the base of the tree. He was too comfortable to think of anything to eat .

At 10:45 I found him sitting in the garden. He responded favorably to my suggestion that he come and get a mouse. He was a little careless in despatching this one and had to reject it after it was part way down his gullet and "kill it some more." He had not eaten his meat

About 2:30 he was ready for another mouse. These two mice appeared to be all he ate during the day. I do not think he left the place all day, showing renewed interest in the roof ot the cage as a resting place and also the acacia at the eastern end of it.

When I looked for him at 4:15 he was already in his present night roost in the peppermint gum.

This group of gum-trees (E. amygdalina) is on the south bank, outside the fence along the crest of the bank, but inside the property lines. It is about 90 feet south of the tool-house and the surface of the ground at that point is about 30 feet lower than the level at the tool house.

Now that Rhody is using these trees as a night roost (also at times during the day) they seem to be the focal point of his "inactivities", so that, for the most part, at the present time, he is to be found both night and day within a semicircular area of about 50 yards radius having the group of gums as a center and the street on the south as the east and west diameter. This area includes the cage and all of his preferred loafing places within the grounds during this present period of irregularity in his night-roosting habits.

Nov. 25th. (Sunrise 7:00 A.M., sunset 4:53).

The sun rose in a clear sky; thrashers heard intermittently.

At 8:15 A.M. (51°) Rhody was still in his roost enjoying the sun.
" 9:15 " he was sunning at the sage patch, having already eaten his meat. Shortly after he transferred to the roof of the cage, having run rapidly from his former location synchronously with the bursting out of shrill calls of children on the street mingled with the noise of their coaster on the sidewalk. A few minutes later, however, a hawk flushed from in front of me less than 100 feet from the cage. It passed swiftly by the group of birches at the oval lawn where an Anna humming bird was doing his power-dives, over his mate in the top of a birch, with an explosive whistle at the low point of his orbit. (Observe time of year of this display).

Rhody did not come down from the roof until 11:50 A.M. and then only because he was ready for a mouse. In following me to the tool house it was seen that he took all possible advantage of cover and ran across open spaces with spread wings, even when the distance to be traversed in the open were of the order of only ten feet. After eating the mouse he wanted to go to the south-facing bank across the driveway from the tool house, forming the north boundary of the orchard; so he worked his way out into the point of shrubbery that would give him the shortest path in the open and dashed across with spread wings. This bank is sunny and protected from above by overhanging bushes at the same time. Here he composed himself for a good rest. (Hawk "conscious"?)

Longbill* takes Rhody's resting place.

At 1:15 I looked down over the top of the bank to see if he was still there, but he was not. In his place, sunning and working over his feathers in great detail, was the thrasher, Longbill,* easily identifiable at this short range of ten feet. She was aware of my presence, but went on with her preening as if I were not there. (I think the pronoun is correct--if not it can be changed).

I toss her worms.

I left to get a supply of worms, finding her still engaged as before on my return and only favoring me with one short glance on seeing me. On account of interfering branches I was unable to land worms where it was certain that she could see them, so I went down into the orchard and approached her from another direction, finding that she had discovered the worms and was now eating them. I tossed more, but branches still interfered and she finally wandered off unhurriedly.

* Undoubtedly not Longbill--malobservation due to overconfidence!

Nov 30

I now left for the afternoon. Julio says Rhody had another mouse at 3:30, coming in response to repeated calling from some place out of sight.

He again slept in the same place in the eucalyptus tree.

Another factor affecting change of roost?

A possible factor bearing upon his change in roosts, which has not been suggested herein, is that, with increasing reliance upo human agency in the provision of food, it is not strange that he should shift nearer to the source of supply. Expressed in another way, it may be considered that this act is an evidence of increasing domestication. He is getting lazy!

Nov. 26th. (Sunrise 7:01, sunset 4:52).

Scattered, mostly distant, thrasher song and calls, early AM.

Rhody frolicsome.

Rhody came down from his roost at 9:30 A.M., preceded me up the driveway from the entrance and began to cut fancy capers through and around the sage patch. Then followed much bill wiping as if he had just eaten. Worms tossed to him were looked at curiously and then dropped. He would not follow to the tool-house, but was animated and friendly and inclined to frolic.

Rhody casts 2 pellets.

It was therefore somewhat of a surprise when, at 9:52 precisely, he shook his head and cast up a pellet, following almost immediately with another and smaller one, since his immediately preceding behavior indicated (to me) no discomfort. I thought, in fact, quite the opposite. This somewhat weakens the force of previous suggestions that the road-runner may be really ill when it disgorges pellets; but, on the other hand it may be that these rattle-booing circuses really , at least at times, indicate internal discomfort.

Appetite still good.

In a half hour or so more he had eaten his meat at the cage. At 11:30 he was in the chaparral on the south bank and, on seeing me on the opposite side of the fence followed close to the wire eagerly until he could find a hole under it to come through, the growth on the fence now being so dense that it is impossible for him to force his way up and over.

Rhody draws audience

Again he crossed all the open spaces on the way to the tool-house at full speed. A big mouse was taken from hand and its hind legs waved from the corners of the bird's mouth for several seconds, until by a last effort, he was completely engulfed. This performance attracted a flock of bushtits, two plain titmice and a kinglet, all of whom climbed down to the lower branches of the trees overhead and scolded. A short rest and Rhody dashed at high speed across the driveway, halting instantly when reaching the cover of the bushes on the other side. At 1 P.M. he was still sitting in a bush there taking it easy.

R and I try to identify a strange thrasher

Noise frightens Rhody

2:45 He has remained continuously in this same bush ever since. The big mouse has evidently kept his digestive apparatus busy. At 3 6'clock he had left and I could not find him, but when I was watching a thrasher in the sage patch trying to identify it, Rhody came trotting up the path and took station near me (6') where he stood for 10 or 15 minutes, until he became restless on account of a hideous din made by children , coasters and a fox terrier on the street below. He retreated toward the tool-house, but wanted no food of any kind. He wanted to go to roost and made several advances nearly to the eucalyptus tree, each time retreating on account of the noise. Finally, when the terrier somehow or other was eliminated, R made his final attempt good and reached his roost at 3:45. It must have taken considerable courage for most of the noise came from a group only about 50 feet from the tree.

Nov. 27th. (Sunrise 7:02, sunset 4:52).

Day dawned bright, clear calm. Thrashers not heard.

At 8 A.M. (56°) Rhody was in his roost enjoying the sun.
" 9 " Still in roost.
" 9:15 " " "
" 9:20 I met him face to face at the turn of a path as he was running swiftly toward me. This surprised us both and he put on both foot- and wing-brakes (also tail-) turned quickly aside and began to sun his back. This continued until 9:55, when he came for a mouse, after defecating forcefully and turning to look at the results--a common procedure.

At this time a thrasher was scripping at the entrance.

After eating his mouse Rhody retired to the same bush on the bank above the orchard that he used yesterday. This bush (Baccharis) has in its top a tangle of slender branches forming an almost nest-like platform upon which he can lie and, at the same have a fairly extensive outlook. It is sunny at this time of the year up to about 3:30? P.M., when the shadow of a pine reaches it.
12 M. Rhody still there.

Another session with Longbill.*

Just before this (11:40) I looked through the fence near the entrance along the slope of the bank under the chaparral, for thrashers. I saw one almost at once preening. I approached to within 6 feet. I began to toss a worm at a time to this bird, by "indirect fire" because of the thick bushes. It was singing a soft song as it preened. (Like slumber song). Now and then a worm fell near it, which it ate. Soon it began to expect more. I moved closer and managed to get an occasional worm through the tangle to a point where the thrasher either saw or heard it. These were also taken. I now adopted the strategy first used with Brownie: I began to drop them closer to myself--at the fence in fact. The bird, which I could now see in detail, was Longbill* She had to come within three feet of me to get those worms that dropped right at the fence and show herself fully. This she did and had a good look at me, but was undaunted, continuing to pick up the worms at that distance until simultaneous exhaustion of my supply and passage of the milk-truck up the grade 30 feet behind me interrupted the session, Longbill*leaving.

Making progress.

At 12:30 Longbill*was back again and could he heard singing very softly. The experience above described was repeated, with these differences:

Longbill*approached the fence before I tossed a worm.
She picked a worm off of the wire with nothing between us (except the coarse mesh of the fence) three feet from my knee.
At this distance she once resisted the temptation to retreat when I tossed the worm.

At 1:30 Rhody was found on top of the cage, ready for a second mouse. He had not eaten the meat.

At 2:40 all birds scarce, including R. A Cooper hawk flushet from a tree at the clearing afforded explanation.

At 3:30 P.M. I found Rhody already in his roost in the eucalyptus tree. (Clear, north wind, 60°).

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* The identification is uncertain. Later:Nov.30th. A careless "identification."

Nov. 28th. (Sunrise 7:03, sunset 4:52).

A few thrasher calls and short bursts of song heard in the early morning.

At 7:45 A.M. Rhody was still in his roost. (Clear, light northerly breeze, temperature 54°).

Looking down R's throat as he attempts disgorge a pellet.

Rhody not sick; very much at ease.

I missed his exact rising time, but at 8:55 he was sunning at the sage patch. I squatted down about 4 feet from him. He took a step toward me and, facing me so that I could look down his throat, made strong efforts to dislodge a pellet without success, using one foot to "massage" his throat at the same time. (This is not new). His oral cavity (?) seemed to be trying to turn inside out. (Also not new). He did not seem to be disturbed about his failure and was bright and alert in appearance, responding at once to movements on my part which he associates with meal-worms. Consequently I acted accordingly and he caught skilfully all the worms I had with me then lay down facing the sun in a hollow into which he fitted snugly. He was at peace with the world, occasionally reaching out with his bill to touch,or pick up and drop,small objects which could be reached without disturbing his repose.

I made several short trips part way to the tool-house without arousing his interest sufficiently to cause him to follow. An occasional bee, fly or yellow-jacket passed close to him. These he watched with interest and, if close enough, he poked at them in perfunctory fashion, not really trying to catch them.

I felt that he really did want a mouse, but was too comfortable or too lazy to come and get one . His appetite was, so to speak, at the threshold. So I went and got him a small one and dangled it against his nose. (A small one so that he would not have to work too hard in disposing of it!) He took it and swallow-it promptly, but did move off with it about 18 inches. After a short rest there he shifted a dozen feet or so to the overhanging branches of a bush growing at the top of the bank on the upper side of the entrance driveway. At 10:30 he was still there, resting and sunning.

Rhody becoming a Sybarite.

It is fairly clear, to mix metaphors, that the luxury of Capua is knocking the lumps off of Rhody's rugged individuality!

At 11:00, as I drove down the road, he was still there, the top of the car passing about 2 feet from him. About 11:30 I drove up again without his moving.

Spread-eagle pose at 62°

At 12 the milk truck even closer. He shifted 3 or 4 feet. After its return passage he returned to his former place in the bush. After a short time he came down to the bank itself. With the thermometer at 62° in the court it was hot enough on his bank to justify the spread-eagle pose, followed by neck-scratching and panting, then retreat to the shade of the bush.

He cries on seeing me,

At 1:15 he was up in his former place--this time crying on seeing me; meaning fully restored appetite, which was demonstrated on his following to the shop and taking a large black mouse from hand.

At 2:30 he was back in this same bush.

Thrasher "X"

As the footnote on page 1550 states, the identification of this thrasher as Longbill is uncertain: it will be necessary to have a good look at it when it is in complete repose, in full light, in the open. Designate it temporarily as "X".

Just now, while walking along the path by the sage patch, this bird suddenly appeared, ran along in front of me for a few feet and disappeared in the honeysuckle and roses on the fence. I approached carefully and tossed a few worms into the dense

tangle. It was about 6 feet from me and at the height of my shoulders. It struggled toward the place where one of these worms must have clung, then dropped to the ground and picked up one. I now crouched about 3 feet from the fence where I could peer beneath the growth, and tossed a worm or two through the wire. It came and got them, retreating only a foot or two at each movement of my hand in throwing. Some worms fell on my side of the fence. It crowded through the mesh to get them practically within arm's length, retreating hastily, but returning each time for more. The light is not good there, the bird's motions are very quick and there are so many thin and dry twigs and stalks that I can not get a good look at its bill. However, I get the impression that it is not Longbill. If it is, Brokenwing ought to be somewhere about, if he has not met with disaster.

3:55 P.M. I found Rhody just settling in his roost in the eucalyptus roost at 3:35. It is pretty windy and he is swaying about.

I went to the fence to see if I could get into contact with X again. I could not see him, so waited, thinking that if he has formed a food-association with me, he might appear. I whistled Brownie's "purple one, two, three" call softly and the "wheat-you" of the little, crippled thrasher of Brownie's October-November brood. I also called vocally, not expecting that any of the sounds would have any significance in his mind beyond perhaps serving as notice that that ungainly animal that throws worms was back again.

Anyway he came in a minute or so and the last performance was repeated. He was eager to get the worms, again squeezing through to get some of those that fell short and, moreover, several times when there were no worms to pick up, clung to the wire 3 feet away watching to see if I would toss him more.

There is no doubt in my mind that he knows where the worms come from.

Thrasher X
becomes
NEO.

4:35 P.M. I have just returned from another session with X. When I went out at 4:15 he was singing quarter-song near the entrance, but stopped when I approached the fence. As before, he could not be seen, I called and so forth. No sight or sound from him for several minutes, then a rustling in the honeysuckle nearby and I made out his silhouette against the sky, in the tangle near the top of the fence. I tossed a worm or two in the path on my side of the fence, about 8 feet away. He wanted it, but was afraid. I tossed more. Down he came, much to my delight, and got them, retreating rapidly to the sage patch and there digging vigorously, only to come back again when I tossed more worms. Soon he was getting them within 6 feet of me, especially if I pretended not to look at him. Next he waited about 8 feet away, fully in the open, for more. I had a good look at him. Positively he is not Longbill, Brokenwing, Okii or Chiisai. He cleaned up all the worms, taking the last one off with him into the honeysuckle.

I hope he (?) sticks. He will be called Neo.

Nov. 29th. (Sunrise 7:03, sunset 4:52).

At 8:15 Rhody was still in his roost. (Windy, clear, 56°).

Neo responds
promptly

I went to the fence near the sage patch and spotted thrasher X at once. He saw me and came to the wire without delay, waiting patiently for each worm tossed to him. He did not retreat at all on account of my throwing motions.

At 9:25 he was in the sage patch, but came out promptly on call and ran to me in the open, picking up worms at 5 feet distance.

15 minutes later he was seen in the open 50 feet away, but again came for worms.

At 10:30 he squeezed through the fence from outside to get worms from me.

At 10:45 he was singing near the glade, approximating full song at times, in volume. He then changed to quarter song.

At 11:30 he was not to be seen, but soon he came to the fence looking for an opening, finding Brownie's old passageway under it and coming through there to get worms five feet from me, then going back through the same opening.

Neo's iris color.

I have not seen his eyes in full, direct sunlight, but they appear to be of the color of young birds (or Greenie's).

Rhody attempts to convey message to me?

During this time Rhody, possibly because the wind was now very strong from the north, was not to be seen. However, I found him at the sage patch about 11:15. Instead of greeting me with a whine he rattle-booed. When I went to the tool-house he would not follow in the open road, but sought a course several times as long under cover. He would not come out from the cover and cross the road to the tool-house, but rattle-booed at me, which I took to mean that he wanted to come, but that he wanted me to know that, for some reason or other, he was reluctant to do so. (Wind, hawks?).

I "compromised" by taking the mouse to him.

R's bedtime. (late)

4:20. P.M. Rhody wanted no more food from me of any kind during the rest of the day and went to his new roost in the eucalyptus at 4:08. (Bright, windy, 61°). This time, it will be noted, is a little later than usual, but there was nothing about the day, as far as I could see, to account for it; unless the swaying of the tree caused him to be reluctant to make the attempt.

Wind upsets Rhody's equilibrium.

To make his last leap from this present "ladder tree" to his final roost, he walks out on a long, slender, nearly horizontal branch that points toward the roost. From there he takes off. The road-runner's feet (two toes pointing forward and two backward) do not give him a very wide base and, whether it is due to this cause or not, it has been noted frequently that these birds are not good at "walking a plank." In the present instance, while on the projecting branch, Rhody barely saved himself from falling twice when a gust of wind struck the branch (and him).

Neo responds to call.

Earlier than this, at 2:30, Neo who could not be seen, in response to call at the margin of his territory, came through the fence in about 1 minute, and to me for worms.

Again. Comes closer.

At 3:30 he again responded as promptly. This time I succeeded in having him take worms from the ground three feet from my knee without retreating when a worm was tossed to him. Two or three times he picked up worms even closer.

Responds at sunset.

I tried him again when the sun had just set and he was not in sight. It took longer this time--about 2 minutes--but he came through the wire. I had anticipated failure even to locate him at this late hour. He was a little more timid, perhaps because he saw Julio watching 50 feet away, but he got his worms.

Nov. 30th. (Sunrise 7:05, sunset 4:51).

R up "early".

At 8:30 Rhody was already out of his roost and sitting on the bank in the sun near the roost tree.

At the same time Neo was seen running from the sage patch to take refuge on the other side of the fence in the chaparral. However, in a minute or two he was coming to me for worms.

Neo and Rhody.

At 9:25 I went to the sage patch. Rhody was sunning on the upper bank of the driveway nearby. I turned my back on him and went to the fence to call Neo. He came running from the entrance 50 feet to the left. I tossed worms 6 feet in front of me. He was unaccountably nervous and would not come and get them. This was soon accounted for when Rhody came from behind me and gobbled them all and then waited expectantly for more. Neo had retreated to the other side of the fence, where he scripped, presumably because of Rhody's presence.

I now went to the fence and Neo came for his worms. Rhody came, stood quietly by me and watched Neo without offering to attack him. Neo was bold enough to squeeze through in order to get the worms that dropped short.

Rhody now accepted an invitation to the tool-house for his first mouse of the day.

At 10:20 I placed a chair at the edge of Neo's domain, sat there and whistled various imitations of Brownie's calls--imperfectly of course. I used no other sounds. Exactly nothing happened. After waiting a few minutes I stood up and peered down into the bushes, finally seeing him, back toward me, about 20 feet away, at the edge of the sidewalk. I now called vocally for the first time. His response was instantaneous; he truned and worked his way toward me. I went back to the chair and waited. He came through the fence and approached me for the worms now tossed to him.

At 11:05 I went back to the chair as quietly as I could and remained perfectly silent. He was not in sight. In about two minutes I saw him coming up the bank. I made no inviting sound or gesture. He looked for a way to get through the fence at the point nearest me, found none, ran to Brownie's old hole, came through, then back toward me and waited two yards away. I now tossed him worms, nearer and nearer to my feet, until he was taking them at my feet. He was pretty shy about it and frequently retreated to the other side of the fence, especially when some bird sounded an alarm note; but he always came back.

When the worms were gone he went to a small spot of sun in the bushes to preen, sun himself in the typical thrasher sidewise pose and to sing softly to himself.

Up to the present time and since he first accepted worms, Neo has not once failed to come when proper inducements were offered.

Neo's iris color.

At 1 P.M. the chair was moved so that when Neo came, as he did promptly, he would be in full sun. In this way I hoped to determine the color of his irides; but the sun was at his back and he would not keep his head still long enough for me to be certain. I thought I caught glimpses of bright orange-brown, but can not be certain that this represents the true eye color, because some of the light from the eye was transmitted diagonally through the cornea.

At this time Rhody was still resting in the bushes on the bank above the orchard after his mouse of the morning.

Later he transferred to the upper bank of the entrance driveway and did not leave there until a little after 4 o'clock, making his last jump to his night roost in the eucalyptus at the late hour, for the present season, of 4:29. As far as known, he had no food since the morning's mouse. (Clear, calm, temperature 60).

I now went to look up Neo. As expected, he came through the fence promptly when called and had his worms.

Dec. 1st. (Sunrise 7:06, sunset 4:50).

A dull morning, no thrasher sounds.

At 8:25, as I approached Rhody's roost, a hawk darted out from a nearby tree. Rhody was still in his roost, but appeared aware of the presence of the intruder.

For the first time Neo did not respond to my invitation to come for worms, nor could he be seen in the bushes. No other birds were visible, except under the bushes. Hawk, probably. (49°).

At 9:30 Rhody was still in his roost and most other birds pretty well concealed. Neo was not to be found, but in the area which he usually occupies were goldencrown and Gambel sparrows, the two kinds of towhees, wrentits, a hermit thrush, an Anna hummer. I feel certain that Neo is elsewhere, otherwise he would have come out.

At 10:20 sun breaking through. No change as to R and N.

At 10:30 Rhody sailed down to land at my feet on the orchard path. He lost no time in following for a mouse, but was careful to keep to cover wherever possible and dart across the open spaces. The mouse finished, he ran as fast as he could to the sage patch, using his wings. After a short rest here he moved to his bush on the upper side of the entrance driveway and did not come down from there permanently until 1:30, when he followed to the tool-house for his second mouse. Half-way there stopped and rattle-booed once. This time he did not wait to eat the mouse, but ran off with it to the glade.

2:15 still there. As yet no sign of Neo.

At 3:51 he began his slow ascent to his roost in the eucalyptus tree, and it was not until 4:24 that he was settled in it. As in the case of his old roost, he invariably takes the same route through the ladder tree. At present the only use he has for the house, so laboriously installed for him, is as a landing stage. (Cloudy, dead calm, 54°).

At 4:45 gorgeous sunset colors were complemented in the east by a magnificent rainbow forming a complete semicircle--a somewhat rare combination and mildly surprising (until rain began to fall almost immediately.)

At 5 a thrasher was heard scripping as if going to roost somewhere in Neo's domain, but that bird was not seen.

Dec. 2nd. (Sunrise 7:07, sunset 4:50).

Some thrasher scripping off to the east in the early morning; but no song.

Some rain during the night, but sun out this morning. Partial eclipse of the sun due this afternoon.

At 8:25 Rhody was till in his roost. Repeated observation up to 10:25 showed him still there.

No sign of Neo.

At 10:35 Neo was back in his "regular" place and responded to offers of worms by coming through the fence and picking them off of the ground about 6 feet from me. He had lost some of his former confidence, unmistakeably; but after having perhaps a dozen worms, I was able to get him to come to me along the orchard path about 100 feet, to where I was watching Rhody, and here much of his

much of his timidity vanished.

At precisely 11 A.M. Rhody shifted a foot or two to the porch of his neglected new house. He inspected the interior and then spent the next two or three minutes trying to disgorge a pellet, scratching his throat while gaping and shaking his head. I could not see whether he succeeded or not. At 11:08½ he sailed down to the orchard and ran swiftly to the sage patch. He wanted no mice.

There is a suggestion here that, when his pipes are clogged with fur, his appetite is poor and he lacks incentive to leave his roost. There was nothing about the weather to keep him there that was evident to me. (Sunny, though somewhat hazy, 59°; at 8:25 it was 54°; no wind at either time).

For several days now Rhody has eaten no meat from his dish and, as far as known, has had mice exclusively. There has been no evidence of his having foraged for himself.

At 11:55 he was still lying by the sage, but was now ready for a mouse. I had thought it probable that he would go back to meat, but his supply was still untouched.

At this time Neo was sitting quietly in the honeysuckle on the fence in his domain. He seems to be a good rester too. On several occasions later in the day he was induced to come far from his chosen refuge to get worms. Once also, when I was looking for Rhody, he spotted me and came without invitation. Again, shortly after sunset, he came out of his retreat to get worms from Julio.

Rhody wanted no more food from me during the rest of the day. (Clogged pipes?). At 3:43 he made his last move to the eucalyptus roost: considerably earlier than on the last two or three days. The eclipse was then in progress, but so little of the face of the sun was obscured that the earlier retirement can not be attributed to that phenomenon. It didn't effect Neo. (62° at 3:45).

Dec. 3rd. (Sunrise 7:08, sunset 4:50).

Thrasher calls and short burst of song heard up to about 8 A.M. in various directions. Neo was perhaps one of the vocalists as he was not at his usual place at 8:25.

At 8:20 (Clear, slight breeze from the north, 52°) Rhody was still in his roost; but at 9:20, he had moved to a sunny branch of the adjoining tree to rest and preen. He was not concerned about food.

At this time Neo was still unaccounted for.

At 10:10 A.M. Rhody was found on top of the cage, mildly curious about a black-bellied plover inside. (This bird was brought here Nov. 28th., with a badly broken wing, by a party of little children and their adult leader, they having found it in the marsh near San Rafael. Dr. Reynolds taped the wing and the bird is now doing well, subsisting principally on angle worms and beef).

Rhody had eaten none of his meat and, when he dropped down from the roof landing close to it, ignored it, indicating by his actions that he wanted a mouse. He was, accordingly, accommodated at the tool-house.

He spent most of his pre-bedtime hours in a comfortable berth in the baccharis and broom clump on top of the bank of the entrance driveway. This place is much favored by him at present. Julio gave him a mouse there about 2 P.M.

At 3:24 he was already in his night roost in the gum tree. There was nothing to indicate his reason for thus advancing his time of retirement over his recent practice. (Clear, calm, 62°).

Neo was not seen during the day.

Dec
~~Nov.~~ 4th. (Sunrise 7:09, sunset 4:50).

At some indefinite time, considerably before sunrise, a thrasher was singing almost continuous full song near the west end of the house, ceasing abruptly at 7:35.

This song contained no phrases, either musical or "verbal" that were clearly enough marked to enable one carry them in the mind for even a few seconds.

At the same time other thrashers were singing in the distance to the east and south.

At 8:30 A.M. Rhody was still in his roost.(Sunny, calm, 55°).
" 9:40 still there. Wind from N.E. rising.
" 9:55 he had descended to the shelter of the bank near the tree. The wind was now fairly strong from the N.E., but at ground level, due to irregularities of topography, gusts came from almost any direction.

At this time Neo had not been seen.

At 2:30 Rhody, who had been sitting in a bush on the bank above the orchard most of the time since his first mouse (at 11:30) saw me in the garden, came down without invitation and wandered casually toward the tool-house. This meant another mouse. He then went back to the same bank, where he stayed until time to start for his roost.

Rhody again visited by a hawk.

At 3:45, while three of us were watching Rhody hesitating about making his last jump to his roost, a hawk suddenly dived down at him from the sky, stopping in mid-air about 10 feet from where Rhody had just been, but Rhody had dropped like a plummet to the ground and escaped. He did not go far, and then not fast: only about 20 feet to a climbing rose, with a dense canopy, on the fence. He crawled up into this and stayed there until 4:20, when he resumed his ascent of the ladder gum tree, but altering his route in such a way as to be well concealed from above, making long stops in concealment., until he arrived at the take-off point. From his behavior just preceding I had anticipated that he would pause there for an instant only, he inconsistently posed there for several minutes, as conspicuous as a light-house. At 4:34 he was settled for the night. The episode had delayed him about 49 minutes, but had not caused him to change roosts (possibly going back to his house in the oak) as I half thought it would. (Clear, calm, 60°).

The hawk flew to the old oak, but would not stay until I got a gun. This was not nearly so narrow an escape as was the first one witnessed, when he appeared to avoid capture only by inches.

Whether or not it is a conscious act of the roadrunner, with the hawk-hazard definitely in mind, the changing of roosts would seems to be a safety precaution in fact.

Dec. 5th. (Sunrise 7:09, sunset 4:50).

No thrasher song heard in early morning.

8:45. (Sunny, strong north wind, 58° (est.)). Rhody already out of roost and sitting down on bank; probably early on account of the high wind.

Neo absent.

At 11:20 A.M. (68°) Rhody, playing with a lizard, got careless, and allowed it to escape under a log, then tried ineffectually to dig it out with his bill. This shows he will indulge in play with lizards, even when really hungry, for he at once followed to the tool-house and was so eager for it that, contrary to custom, he came all the way inside to get it.

4:08 (Clear, dead calm, 65°, max. was 71°). Rhody has just gone into his house in the eucalyptus. At 3:30 there was no sign of him near the tree, so I went down to his old place on the west lot, really expecting to find him either in, or on the way to his old house: thereby securing some fine evidence of his having carried in mind his last night's experience with the hawk and his remembrance of his old house and having decided to go there. But the"evidence" was ruined by his not having done anything of the kind, and, naturally, when I returned to the eucalyptus group, he was there. At 3:45 he began his ascent of the ladder tree and was so exasperatingly slow about it that I left, returning about 3:55. To my surprise I found him now in the lower part of the roost tree, having taken a new route. He sat there for several minutes quietly then moved directly and purposefully up to and into the house 6 or 8 feet higher and immediately assumed sleeping posture. Whether he will stay there or not, I do not know as yet; but the directness and precision of his movements were such as to indicate that he knew in advance just what he was going to do. So it may be that I still have evidence, though in a form not expected, that he has not forgotten the hawk and that the house is regarded as offering some measure of protection from attack.

From the temperatures above recorded and the state of the air movement, there appears to be nothing of a meteorological nature to induce him to seek cover. In fact, it is warmer than it has been at this time for several days.

4:30. I shall now go out and see if he is still in the house

4:33. Well, he isn't; so that "story" is spoilt! He is up on the same old support amongst the leaves. Anyway he does know all about the possibilities of the house.

Dec. 6th. (Sunrise 7:10, sunset 4:50--note that sunset time has been remaining constant for several days, while sunrise is getting later gradually).

At 9 A.M. Rhody was still in bed. (Sunny, dead calm, 56°).

I found Neo at his old place eagar for worms. He squeezed through the wire fence after quite a struggle to come to me. He picked up worms within arm's reach.

It was noted that (for the first time) he was "talking" in low gurgles and little runs. I felt much flattered at this mark of his growing confidence until, on going back to the house, I found that Julio had had the same experience with him at 7:30 A.M. this morning, but that there was another thrasher in the bushes with him. Then I remembered (as these notes record) that I had been fooled in this same manner by Brownie many times until I finally learned that this talk was always addressed to his mate somewhere nearby.

Consequently, at 9 A.M., Neo was undoubtedly maintaining contact with another thrasher. Julio saw this other bird and thought it was much larger than Neo, but this cannot be accepted as a correct conclusion because, as these notes have also repeatedly shown: there is an odd illusion which causes the nearer of two thrashers, close at hand, to appear the ~~larger.~~ smaller

At 9:40, Rhody still in his roost, I endeavored to ocular evidence of the presence of Neo's companion. Experience of 9 A.M. was repeated in every detail, but I saw no other thrasher--only a rabbit sitting quietly where the other bird "ought" to be!

This time it was seen that Neo's irides are of the same color as Brownie's: a bright orange brown when in full sun. (This is not Ridgway's designation of the hue).

At 10:45 A.M. (63°) Rhody still in his roost.

Neo was in the sage patch and ran off hurriedly on seeing me, glided under the fence and began preening. I sat in a chair at the place where I usually feed him, with legs crossed, one foot about 8 inches above the ground. Neo kept on preening for about 5 minutes, then decided to come and have a look. He had not been talking, and did not make a vocal sound during our interview, which lasted 15 minutes. I wanted to have him take worms from directly under my foot. This he did several times, each time looking up at my face before taking the worm. These notes have recorded it as a thrasher trait to look a person in the face as if realizing that some evidence of intention could be read there.

At 11 A.M. Rhody still in roost.

At 11:15 he was no longer there and could not be found, but in the process of looking for him, I flushed a Cooper (?) hawk from a low tree and, in another half hour, another (or the same) one. During this period no birds were seen out of cover.

About noon I looked up Neo, finding him where expected: in the chaparral on the bank. In watching him coming to me, my glance happened to rest upon something stirring slightly in the brush. This proved to be Rhody, probably keeping out of sight of the hawks.

Rhody was extremely reluctant to come out of the bushes, although plainly hoping for a mouse, so I got one for him to prevent his having to expose himself to undue hazard!

This proved to be all he wanted for the day.

Neo responded whenever called upon during the rest of the day and at times, took the initiative himself.

At 3:50, on returning from an absence of seceral hours, Rhody was alredy in his night roost in the eucalyptus tree. He had refused offers of food from Julio while I was away.

Another pellet by Rhody.

I overlooked recording that, when Rhody revealed himself in Neo's domain, one of his first acts was to disgorge a pellet. This time I had a side view with back-lighting. R first arched his neck, lowered his head and opened his bill wide, made disgorging movements from "way down", shook his head sideways and it was done. As the pellet emerged, drops of fluid were scattered about by the shaking motion, showing plainly against the back-lighting.

Rhody is still "off of" meat; it is days since he has touched any. This seems to be reflected in his increasingly frequent casting of pellets. In now seems fairly safe to offer the generalization that, roadrunners on a diet consisting almost exclusively of mice, must cast pellets of their fur, notwithstanding the fact that most of the fur passes entirely through the digestive tract and is rejected with the feces.

It is a curious fact that, in both the feces and the pellets, the fur is felted into separate more or less spherical balls about the size of a rather small pea. In the former the arrangement is inclined to be linear, that is, they are ejected as a "string" of balls, in contact with each other, enclosed in fecal matter, without the solid fecal matter penetrating into the interior of the balls. In the pellets the spheroids are arranged in close contact like grapes in a cluster. Several of these pellets dispersed in a beaker of water and allowed to stand for several days, with occasional stir-

December 7th.

Early thrasher song, but not much.

Rhody was still in his roost at 8 A.M.: the coldest morning of the season, 48°. I had little time to watch him today, but he was up somewhere between 9:30 and 10 A.M., and went to roost about 3:15 P.M., according to Julio. He wanted only one mouse and no meat.

Neo was not seen until about noon, coming readily for worms at that time. Julio gave him three centipedes during the afternoon.

Dec. 8th. (Sunrise 7:12, sunset 4:50).

A gloomy morning, but there was scattering thrasher song and Neo was on hand for worms.

Rhody still not up at 9:15. (50°). 10:45 still in roost. He was up, however, before 11:15, and had gone to roost sometime before 4 P.M., having wanted only one mouse and no meat.

Dec. 9th. (Sunrise 7:13, sunset 4:50).

Thrasher song was heard first at 7 A.M., close to the house on the west.

At 8 A.M. it began to rain and Rhody shifted from his roost in the eucalyptus to his house there. Here he was "handed" a mouse on the end of a long pole by Julio about 9:45. Later he came down to sit under his shelter at the old oak and Julio gave him a mouse there about 2 P.M. At 2:30 P.M., still raining, it ws found that he had returned to his old house in the oak on the west lot. As it was now very stormy, it was thought that the swaying of the eucalyptus was objectionable to him and he sought a more stable place of repose. Here is an example of early retirement due to weather conditions at the time.

Neo was not seen during the day.

Dec. 10th. (Sunrise 7:13, sunset 4:51).

Heavy rains during the night and no cessation in sight. The Chronicle reports this morning that the Weather Bureau, for the first time in the history of San Francisco, hoisted two red flags with black centers: warning of "full gale", and that ships at sea were encountering 50 and 70 mile an hour winds. The wind here was strong from the south east, yet thrashers were heard singing in the early morning, in the rain.

At 10 A.M. (not raining, temp. 62°--a warm storm) Rhody was on the bank below his old roost tree, having apparently just come down from the house. He was given a mouse.

12:25. Still not raining, 62°, Rhody not in either house and not located.

Thrashers continued to sing off to the north east. At 3:45 Julio gave Rhody a mouse, placing it in his old house to which he had just retired after apparently spending all the preceding hours on the ground in the neighborhood of the tree. A half hour earlier he would not take the mouse (while on the ground) but after he had retired (according to Julio) and he saw the mouse about to crawl under him "he got mad" and ate it!

Neo was not seen all day, and the supposition is that he has gone to the north side of the spur, seeking a lee, and there remained.

12 o'clock midnight. I have just returned from Stanford University after showing moving picture films of birds at the Stanford chapter of the C.O.C. and find the temperature still 62°! Still raining. This was a Stanford [illegible]

Dec. 11th.

Not raining, mild and cloudy. Thrashers singing to the northeast all the morning. Papers filled with stories of unprecedented rains, floods, washouts on all railroads; Clear Lake, twenty odd miles long, rising 6 inches in 24 hours, etc. This condition due to a vast barometric depression with center of the low out in the Pacific ocean, relatively high temperatures prevailing, with maxima as follows: San Francisco 69, Salinas 71, Fresno 76, Los Angeles 62, San Diego 68.

12 M. At 11 A.M. I went out to investigate the thrasher that was singing off to the north-east. I found there were two in a cork elm about 200 yards from this room. They were both singing confused sorts of songs and hopping about in the leafless tree, behaving much as thrashers do in the "convention season". I could not tell whwther relations between them were pleasant or otherwise. Soon they dropped down into the thicket of Baccharis and I followed. The confused medley of song continued. I was able to keep about 10 to 15 feet from them. Suddenly the songs ceased and they began to fight on the ground silently and viciously. Frequently one knocked the other over onto his back with feet in the air. The one on his bac would try to seize the other with his feet, often succeeding, when they would fight breast to breast, pecking at each others mouths. It soon became evident that their manner of fighting consisted in each attempting to grasp the feet or legs of the other, hold him breast to breast and peck. This was all new to me. Finally I lost track of them, but waited near the elm. One of them flew up into it and began to sing softly and was heard to repeat many times the phrase which can only be written vic-to-ree', with rising tone on the ree. This was so pat an expression of what may have been the truth as to the outcome of the encounter, that I listened intently at a distance of about twenty feet and did my best regard the matter entirely from an unemotional and detached view-point and tried to fit some other syllables to the phrase, but it could not be done. The phrase was vic-to-ree and nothing else as far as the English language (which I did not know thrashers spoke!) can represent it.

Neither of these birds carried any identification marks, so they were neither Okii nor Chiisai.

I sat on the bank and began to toss a worm now and then on the ground in front of me. The bird in the tree saw the very first one. Finally it came down and began to pick them up. Soon it was within 8 feet of me; then 6; then about 3. It ate all my worms. I came back and looked up Neo at his old haunt, but he was not there. I suspect that this bird probably was Neo.

I am inclined to view this whole procedure as defense of

territory by the bird that came to me for worms: the one left in possession of the field, supposedly Neo. The other bird went about 50 yards to the east, higher up the hill and began to sing in the back garden of a house fronting on Estates Drive. I have seen and heard a thrasher + there several times during the past few months. Probably it is his territory and Neo(?) may have encroached and was driven back toward his own, where he in turn repulsed his antagonist, or else that bird was satisfied that he had driven Neo far enough away and retreated voluntarily into his own territory.

1:15 P.M. Thrasher song still continues over there. Territorial behavior? (Later: Song continued up to 5 P.M.; sunset 4:51).

Rhody's rising time was not observed. Julio wanted to go down and give him a mouse, but was told that I preferred to wait and see if he would not come up here first. Rhody did come up and got his mouse.

At 3:30 he was not at either of his two roosting places, but at 4:50 (very late--practically sunset time) Julio saw him go to his roost in the eucalyptus tree. Back again! As it had not rained all day, presumably he had decided that(as it was also no longer windy) he would be taking no chances on the weather by again sleeping in the open, as the stormy period was now over for the time being. If such was his "reasoning", I doubt the infallibility of his judgment.

Hawks were around all day, occasionally flying in and out of the trees. It may be, therefore, that the eucalyptus tree is still considered the safest place. This recent unprecedented vacillation of his in the matter of roosting is puzzling.

12 Midnight. Well, up to 11:45 P.M. it looked as if Rhody were a better weather prophet than I; but it began to pour at that time.

12:15 A.M. I went out with a flash-light to reconnoiter, the rain having abruptly ceased. Apparently Rhody was not peturbed by it in the least, as his flaxen belly loomed up conspicuously at his chosen spot in the gum tree.(I wanted to see if he would move in the night time as he undoubtedly would have in the day time). (55°)

12:20 AM Raining again. (This is really the 12th. Dec., but "fiscally" it may be considered the 11th.).

Dec. 12th. (Sunrise 7:15, sunset 4:51).

About 5(?) A.M. the storm staged a grand pyrotechnical display, apparently its last effort for, at sunrise, the sky was practically cloudless.

Nearby thrasher song was heard at about the same time.

At 9:15 A.M. Rhody was still occupying his same place, now enjoying the warm sun after his trials of the night.

Thrashers were still singing off to the north-east.

At 10:15 Rhody was still in his roost.

At 10:25 I went to locate the thrasher that could be heard singoff to the north-west. He was seen in the top of a small pine growing in the baccharis thicket. I approached to about 100 feet. remaining inside the fence, and called. No response. Making throwing-worm gestures also proved unproductive. I took a pinch of bran from the worm-box, thinking that if I tossed it into the air, he would be attracted by the light colored particles, associate them with my function as a commissary department (provided he knew me) and come to me. This worked on the first trial --even at that distance. He instantly dropped to the ground and threaded his way up through the baccharis to the fence, where I dropped worms to him.

It was noted that a tiny feather over his left eye was displaced.

(I was looking for that marker, as I had noticed that same thing on yesterday's "victoree" bird and kept it in mind, but failed to record it). This was undoubtedly the same bird and, I think, Neo.

By this time it seems probable that most of the thrashers in this general area are descendants of Brownie, and it may be that we are developing a strain of thrashers relatively fearless in the presence of human beings. With perhaps some exceptions that I do not recall at the moment, I have tamed all of Brownie's direct offspring to a point where they have, at the least, recognized me as a purveyor of food and not an enemy. As to most of them: this is an understatement.

On the other hand, my experience with California Thrashers indicates that they are birds that respond readily to human approach. Again, as has been remarked herein before, the meal-worm is a potent "civilizer".

With almost no exception since November 25th. (when the Anna's humming bird's"power-dive" was first recorded for this season of this year) this performance has been observed every day. It is going on now (10:50 A.M.). The sound at the lower culmination of the U-shaped dive may be heard a hundred yards away, more or less. The adult males are ~~in~~ brilliant as to gorgets.

11 A.M. Rhody still in roost. (58°). It can not be seen that he has shifted even one inch on his perch in over 18 hours.

11:15. No change.

11:35. He has shifted about one foot along the limb to a point where there is more sun.

A possible factor in Rhody's change of roosting tree.

About 11:25 I heard voices from the vicinity of Rhody's roost tree on the west lot. There were four or five children,ranging in age from about 8 to 10, gathered in a group concealed in the thicket, smoking cigarettes,(!) only a few feet from the roost tree. This may be a regular rendezvous of these boys and they may also have interfered directly with the trusting Rhody.

I called (also from concealment): "Here they are, POLICE; you can catch them easily; this way; right down there." This, and a few other directions to the imaginary police, caused a hurried exodus to the south-west.

At 11:55 Rhody had shifted two feet to the roof of his new house.

At 12:54 he sailed down to the orchard path and ran quickly to the sage patch to sun his back in the open-bowl pose.(61°). Not warm enough for the spread-eagle posture. He wanted nothing to eat. He had been in his roost tree over 20 hours.

At 1:10 he had shifted to the broom and baccharis clump on the bank overhanging the entrance driveway. Still he wanted nothing from me (although I offered him nothing). I now sat in a chair by the sage-patch, about 15 feet from Rhody and where I could keep watch on Neo's first known domain.

At 1:45 a thrasher was seen in Neo's previously favored sunning clear space among the bushes. This bird seemed shy and I was concentrating upon it when I was startled by a tremendous disturbance in the bushes to my right and Rhody (whom I had completely forgotten) flashed past my feet in full display in one of his foolish, tearing "circuses", using me as one of the focal points of his orbit, in one of his fits of exhibitionism. I think that there is little doubt that its purpose was actually to attract attention to himself and his need for sustenance after his many hours of abstention from food; anyway he promptly trotted after me to the tool-house for his mouse.

I went back to Neo's domain only to find that a brown towhee now occupied the place and, as I had seen the "thrasher" only through a maze of honeysuckle stalks about the diameter and color of a thrasher's bill, it may be that there was no thrasher there at all.

At 2:30 Rhody had retired to the branches of an acacia near his gum tree for much needed rest. It would have been possible to touch him without moving from the sidewalk, but nobody, not looking for him, ever could have seen him except by accident.

From 3:50 to 4:10 he could not be located. When it was found that he was not at or near his gum tree roost it was thought that, on account of the beating he received there last night, he might have decided in favor of his old house; but he was not there either.

He decided in favor of the gum-tree after all and, at 4:44½ precisely, the last rays of the sun gilding his throat, he jumped from the ladder tree to the roof of his house and, in a fraction of a second, was settled for the night on his limb. Two shrill children with roller skates grinding on the pavement and a hysterical fox-terrier passed back and forth almost below him. He did not like it, but he is getting used to our "civilization." I wonder why he was late again. (Perfectly calm, clear 55°). I suppose he was nearby all the time, but he is hard to see where there are bushes and trees, and if he is in the open with only two or three twigs in line with him, or even then, unless he moves, he is only a part of the picture, and is easily overlooked.

Dec. 13th. (Sunrise 7:16, sunset 4:51).

A bright and sunny morning, perfectly calm.

Thrashers singing off to the north-east and calling in the garden When I went out at 9:10, birds were everywhere. Rhody was already up and when I came upon him at the base of the old oak, he was making saucy gestures with head and tail.

Longbill here. A thrasher was scripping in the tree overhead. This bird was, with little doubt, Longbill, whom I have not seen for weeks. No other thrasher seen here has so long a bill and so abruptly curved downward at the tip. Longbill would not come down for worms and soon dived down into the orchard.

Rhody, wanting no food: meat or mouse, repaired to the cage roof to sun himself. (54°). He has eaten no meat for a long time.

Neo back. Julio reports that, at about 7:15 A.M., Neo was at his place on the south bank and was given worms, but was "kind of nervous". This suggests presence of Longbill at that time and Neo's possible fear of him.

At 10:10, in contrast with conditions an hour earlier, the place was almost birdless. There may have been a hawk raid, but I could locate no hawks. Even Rhody was missing, but found a little later on the horizontal eucalyptus limb at the sidewalk that he has recently favored. He had not touched his meat at the cage and had been given no mouse, nor was he offered one.

Up to this time the birds seen here this morning were: Thrashers, Rhody, the two kinds of towhees, Bewick wren, hermit thrush, juncos, read-breasted nuthatches, white- and golden-crowned sparrows, California jays, bushtits, wrentits, siskins (heard), many quail (of course) song sparrows, and, a little later, the plain titmice and the Anna's humming-bird doings its power-dive and whistle for the delectation of its mate.

Rhody continued to sit on his eucalyptus limb until 11:50. At that time he was immersed in the shadow of the tree itself and he saw me approaching. It was time to get out of the shade and time to eat. He came down and toward me before I reached him. When I retraced my steps he followed, with kittenish cavortings and one loud rattle-boo, to the tool-house, where he downed a black mouse in a matter of 10 seconds or less.

Recently Rhody has been satisfied with one mouse a day, no meat, and has foraged little or not at all. Clearly his food requirement has materially lessened. I believe this corresponds with last year's habit at this season, but have not made a comparison of the notes.

He occupied the roof of the cage most of the afternoon, coming down at 3 P.M., but wanting nothing from me. Long preening and "resting" followed and, at 4:56 he settled in his roost in the eucalyptus. (Instead of roosting earlier he is getting later. This was actually after sunset). He had sat near the base of the tree since some time before 4 P.M.

Dec. 14th. (Sunrise 7:17, sunset 4:51).

Morning song of thrashers to the N.E.

At 8:30 A.M. Rhody was still in his roost.(Clear, calm, 55°).
" 9:45 " Still there. I now left for the forenoon
Returning at 12:15 P.M., Rhody was seen on the cage roof. On invitation he followed to the tool-house for his mouse. (65°).

I was absent during part of the afternoon. Rhody was in his roost in the eucalyptus tree at 4:37 when I looked him up; but Julio says he was already there at 4 P.M.

Dec. 15th. (Sunrise 7:17, sunset 4:52).

A little early thrasher song moving from place to place.

At 8:30 A.M., Rhody still in roost. (Partly cloudy, light wind from north, 52°).

At 9:30 Rhody was down on the bank near his tree, sunning in the open-bowl pose. (Wind getting stronger).

At 10:45. Still occupied as before.

At 11:55. He was now ready for his mouse. He seems not to want food early in the day, at this time of the year, and one mouse per day appears to satisfy his food requirement.

At about 3:30 he was sitting by the fence in the orchard where he had been for a long time. Julio placed a live alligator lizard, about 12 inches long, in front of him. He was only mildly interested--perhaps because the lizard would not run, or maybe because he was not hungry. After several minutes he picked it up and shook it, but not very roughly. However, the lizard dropped its tail, which snapped about on the ground and worked its way down the bank like a thing possessing a brain of its own. Even this did not cause the bird to "do anything about it". I had other things to do, so left. As far as I know, the lizard was not eaten.

At 4:34 P.M. Rhody jumped to his resting place for the night in the eucalyptus, but contrary to his usual practice, did not settle for 2½ minutes, possibly because he was concerned about some children playing basket-ball in full sight (and sound) about 100 yards away at a newly occupied house.

Dec. 16th. (Sunrise 7:18, sunset 4:52).

Scattered early morning thrasher song.

Rhody not up at 8:45. (52°). Sunny, calm; fog blanket below.

Neo back with another thrasher.

At this time I heard short snatches of thrasher song off toward the entrance. I went to Neo's territory there and he soon came up the bank, talking, and through the fence to get his worms. He kept up almost constant talk, frequently looked back through the fence and, almost as frequently ran back through the hole under it and peered about, still talking, as if to keep in touch with some other bird. Which was just what he was doing , as I caught glimpses of it digging on the bank and not apparently paying any attention to either Neo or me. Neo went back and forth thus many times, always talking. It almost seems as if he were trying to induce this other bird to follow his example in the matter of worms.

At 9:20 Rhody was up and sunning at the sage patch. After finding him uninterested in worms, I went on 15 feet further to the fence to look up Neo. He came through promptly and the previous action was repeated. The other bird was seen as before.

Rhody shows curiosity.

This time Rhody sneaked up behind me silently to watch, as I discovered upon looking behind me. He wanted no worms and would not even pick them up. He would not follow me for a mouse and soon went back to his sunning operation, ignoring the thrashers. His motive here appeared to be pure curiosity.

Neo does not show same marker as "Victory"

On my two contacts this morning I had ample opportunity to observe whether he had the same displaced feather over his left eye that the "Victory" bird did; but there was no evidence of it. At best this would probably be only a temporary marker and I am inclined to think that Neo and "Vic" are the same bird.

At 10:20 I went back to Neo's domain. There was no talk, but a thrasher was at the fence where Neo usually appears. It ran away promptly, however, and as Neo was not seen, perhaps this thrasher was the other bird and it may be that I did see another thrashers in Neo's place on the 12th. (See last paragraph, p. 1463 and first p. 1564).

Rhody was now found after search sitting in one of his old preferred resting places in the acacia at the east end of the cage which he has not been using lately. Julio gave him a mouse about noon Most of the afternoon he spent in an acacia on the south bank near his roost, and on the bank itself. About 4 P.M. he came back under the fence as if to see me. I offered him worms, but he would not take them. I then got him a mouse and laid it in front of me. He brightened at once, came closer, but merely to watch the mouse. He wnated nothing to eat; thus again demonstrating how well he gauges his food requirements.

At 4:34 he was in his roost in the eucalyptus after his customary deliberate upward progress through the ladder-tree. (54°). High clouds and thin, low fog most of the afternoon; a clear zone between.

Dec. 17th. (Sunrise 7:19, sunset 4:52).

At 8:15 A.M. Rhody was still in his roost. (Clear, calm, 47°).

Neo was not in his domain on the bank near the sage patch.

At 9:15 Rhody was sunning at the sage patch. I could hear thrashers talking nearby, so investigated.

Neo came out promptly to get his worms, keeping up a conversation with another bird out of sight in the bushes.

Rhody wants his mouse early.

Rhody was clearly intent upon not losing sight of me and more than anxious to receive worms, so I turned toward the tool-house, followed closely by him, and gave him a mouse. As measured by recent behavior, this is early for him. Perhaps the one mouse per day is not precisely commensurate with his requirements. If not, he will probably want another one before bedtime. It remains to be seen.

Rhody now went to take up his station on the low eucalyptus branch at the sidewalk.

Neo learning meaning of flick of wrist.

At 10:20 I invited Neo out again, getting quick response. He continued to talk to the invisible other bird. It should have been recorded at the time it was first observed; but Neo has learned the significance of the slight flick of the wrist which I make in tossing worms to him back-handedly. I have repeatedly made this gesture with no worm in hand and he almost always responds by moving up closer, if not already at his present nearest limit of approach. On this occasion this response was repeatedly verified.

By moving a little farther from the fence, he was induced to stay with me indefinitely, sitting about 8 feet away, preening while waiting for more worms and addressing "remarks" to the other bird, the approximate location of which he indicated by his glances and the direction of his calls. He has a tremendous appetite for meal-worms.

Neo's eye color again verified.

11 A.M. After a ten or fifteen minute session with Neo, during which his iris color was repeatedly identified with that of Brownie, I left for a few minutes. On approaching the sage patch a thrasher ran quickly away along the path to the orchard and almost simultaneously, Neo climbed the small redwood in the sage (10 feet from me) still talking. He soon came to my feet for more worms, taking all I would g give him and showing no intention of leaving.

The other bird now appeared and began to dig on the south side of the sage about 20 feet from me, but left soon. I came in to write this note, leaving Neo in possession of the field.

11:30. I went out again at 11:20. Both thrashers were in the sage patch. Neo ran out toward me and, when I crouched in the path took worms just out of my reach, still talking to the other bird (who remained) as long as I furnished him with worms. Once I thought he was going to take one to his mate(?) as he carried it about for perhaps a minute, then brought it back when I tossed him another worm in order to see if he would make a collection for the other bird. Instead of doing this he ate them both. He did not depart until I stood up and came away. So far, he appears to be the "worm-eatingest" thrasher I have ever seen. On this occasion he used phrases in his talk not heard previously. Neo would not accept ant eggs.

At 11:30 Rhody was still on his limb in the gum tree.

At 1:55, at which time he was at the cage, he craned his neck to watch me as I walked away (To see if I was going to the tool house? As I did). He then came down and had his second mouse of the day, as foreshadowed this morning. (62°).

At 4:27 P.M. he made his last leap to his night roost in the eucalyptus, having spent all of his time since 2 P.M., as far as known, withing 50 feet of that tree.

Dec. 18th. (Sunrise 7:20, sunset 4:52).

Early thrasher song this morning. On following it up at 9:10 it led to Neo, who was ready for worms. (56°).

Rhody was still in his roost at this time. (Sunny; north wind). By 10:10 he was down and wanted no food, in contrast with yesterday

morning's hunger.

At 1:30 P.M. he was under the apricot tree in the orchard and, without waiting for an invitation, came and stationed himself at my elbow (he was on higher ground) and waited patiently. I turned toward the tool-house and he followed immediately; but when he reached the place where he would have to cross the driveway in the open, he halted and rattle-booed twice. Other birds at this time had been very quiet and mostly hidden, leading me to suspect the presence of the "usual" hawk. It may be that Rhody's call was an expression based upon his reluctance to cross the open at that time.

Identification mark for Neo.

Neo was given worms three or four times during the forenoon. At no time did he talk and no other thrasher was seen in his neighborhood He now has one of his long tail feathers broken at the mid-point and flapping loosely. For some this will serve as an identification mark. (On his right hand side).

Neo seemed to be alone in his domain all the rest of the day also but responded whenever invited to come through the fence.

Rhody, after being findable on demand, was not to be seen in the neighborhood of his eucalyptus tree about bedtime, so after waiting until about 4:30 for him to appear, I went to his old roosting place and found him already tucked away in his house there. (Perfectly clear, calm, 57°). There is nothing in the weather to suggest the reason for the change.

Dec. 19th. (Sunrise 7:20, sunset 4:53).

Curiously enough, Rhody's change to the greater protection of his old house, proved to have been amply justified, for about 10 P.M., a strong north wind arose (last night) which would, I think, have made his roost in the eucalyptus almost untenable, although if he had gone there before the wind started he probably would have had to stick it out. As observed in yesterday's notes, there was nothing at the time of his retirement to indicate that any change in weather conditions was imminent.

At 8 A.M. this morning the wind is still strong. Neo was in his domain on the south bank where it was sunny and protected. I did not look up Rhody at his old roost. (54°)° Clear.

At 9 A.M. Rhody was not at his old roost. Wind still strong. A little later I found the wind was blowing at 30 to 35 miles per hour

Returning at noon, Rhody was home and ready for a mouse. The wind was dying down. ([illegible]).

Neo was still on the bank, ready for worms and unaccompanied.

Rhody again turned down the new roosting place and went into his old house at exactly 4:10 P.M. It was then perfectly calm and cloudless, with temperature in the court 62°. Again there is nothing to indicate any change during the coming hours of the night.

10:30 P.M. Well, Rhody may have had another hunch for, again at about 10 P.M. a strong wind came up just as it did last night! Crystal clear, 54°.

Dec. 20th. (Sunrise 7:21, sunset 4:53).

The wind was still strong at 8:20 A.M. Rhody was not in his old house, but was found in the acacia near the eucalyptus group where he was out of the wind. (52).

Neo, who had been singing, came promptly for his worms.

Rhody was ready for his mouse at 10:10 A.M., but would not come to the tool house for it on account of the strong wind, which seemed much stronger than yesterday.

Neo also was disturbed by the wind, but responded whenever he was "home".

At 3:15 Rhody was inside the fence sitting near the hole through which Neo enters. He accepted a worm or two without enthusiasm. I went and got a mouse and carried it concealed in the red box. Rhody had not been responding to my suggestions that he follow to the tool-house, but the instant I showed him the red box,(for the first time in several weeks) his response was immediate. So he has not forgotten that association.

Next I showed him the mouse. He came, but only to watch it while sunning his back 2 feet away, for fully five minutes. He then took it and killed it, but abandoned it.

About 3:45 he went out the entrance and trotted west along the sidewalk, passing his roosting place in the eucalyptus tree, evidently intending to go to his old house in the oak. There was now no perceptible wind. About 20 yards beyond the tree he was f frightened by men cutting a lawn across the street and ran up the bank, under the fence and into the orchard. Here he continued his westward march, undoubtedly headed for his old roost, but soon stopped. I now joined him to watch the outcome, as it seemed that he might be hesitating between the two places. For about 30 minutes he remained in one spot listening to all sounds and apparently studying his surroundings, giving special attention to the trees to the north. At last he made at least a partial decision and reversed his course and went slowly, almost one step at a time very cautiously back to a point on the path opposite the eucalyptus tree.

Here he hesitated, then went under the fence and, at 4:25 began his deliberate climb to the roost. He jumped across the gap to the roof of the house at 4:46 and settled on his final branch at 4:49.

We have an example here of his behavior in making up his mind as to which of two roosting places to select. Whether the final decision was based on his "weather forecast" or upon reluctance to make the longer journey under conditions considered hazardous, or what, is not clear; but it is clear that, for some reason or other, he did not carry out his original intention, impulse, or whatever it was, to roost in his old house.

10:00 P.M. No wind at all; perfectly clear, temperature 51°. If we assume that Rhody's selection of place to roost tonight was based on his conception of the weather to be anticipated during the night hours, we must concede him --so far--three consecutive correct prognostications!

Dec. 21st. (Sunrise 7:21, sunset 4:54). The day is lengthening "on one end" about as fast as it is shortening on the other. We are close to the winter solstice.

Rhody's choice of night roost seems to have been justified by the weather, as the night remained calm.

At 8:20 A.M. he was already up and sunning his back at the sage patch. (Julio says he was not in his roost at 7:15). (47°).

Neo was not seen at 8:20, but Julio found him in his regular covert at 7:15 and gave him worms. He had been singing full song there a few minutes before. No other thrasher was with him.

At 9:20 A.M. I did not see him on arriving at the sage patch until he suddenly appeared out of the bushes and began to sun his back close to me. At 8:20 he had been indifferent to my presence, but now he was keenly interested, raising and lowering his crest, turning his head to look up into my face frequently, watching the movements of my hands, examining the ground to see if he had overlooked any donations. (There had been none. I knew what he wanted, but waited to see what he would do about it). He now took a few steps toward me and pretended to pick something up from the hard, perfectly bare ground. Next he squeezed by me and headed for the tool-house, stopping to let me pass as I took the hint. I rewarded him at the mousery with the biggest mouse I could find. He now proceeded to rest.

About 10:20, when I came out of the house again, birds were unusually plentiful and active. They were to be seen near at hand in all directions, wherever I looked. A new thrasher, brown and spotted towhees, golden- and white-crowned sparrows, song sparrows, innumerable bushtits, wrentits, California jays, flickers, juncos, quail, red-breasted nuthatches calling, an Anna's hummingbird~~s~~ doing its power-dive with whistle over its mate, plain titmice--perhaps more kinds. All were active and apparently happily engaged, without fear of hawks. Perhaps the absence of hawks was the occasion for their freedom of action.

Rhody, to my surprise, had abandoned what should normally have been his long period of rest after eating heartily and was, of all places, on the roof of his new house poking around with his bill. soon he went inside and examined everything closely. Then he sailed down past my shoulder into the orchard; then dashed up the bank and to the court into a flock of quail: these birds immediately began walking up the branches of the spreading oak there, to the roof of the shop. Rhody now went up on the roof of the lean-to over the shop door and peered up into the trees. From there he went along the roof to an upstairs sleeping porch. From there he again inspected his surroundings. A carved bracket below the eaves now attracted his attention and he flew up to that, examining its flat top as if looking for a nesting site. From there he sailed down into the court, then inspected the cloister and next the lily pool. From there he ran and flew down to the orchard, thence through the fence to resume his interrupted rest on his favored eucalyptus limb.**

What had gotten into him? He has not been so active as this for a long time. Was it his spring awakening, with the astronomical winter just arriving? Was it the same stimulus that activated the other birds, whatever that was? I do not think the immediate and specific cause was any of these--directly. I think he was merely excited by the presence of so many other birds, in so many places.

**Add after the word limb: first, however, indulging in a prolonged circus through the bushes on the bank, dashing about with spread wings and tail with excited rattle-boos, immediately thereafter becoming as placid as an old cow.

In sharp contrast with the activities just described, were conditions at 11:20. Not one bird, excepting Rhody who was still on his branch in plain sight, could be seen in the open. None could be heard. Even in the bushes I saw only two or three birds: golden-crowned sparrows semi-frozen. About 11:30 a hawk sailed along the driveway behind me only three or four feet above the ground. This gives the other side of the picture.

Neo was not seen again during the day. I spent a half hour trying to gain the confidence of the new thrasher, without success, although he visited the feeding station 15 feet from me, well aware of my presence.

At the time of the hawk scare, approximately, Rhody transferred to the acacia at the sidewalk that he also affects now. He did not come down until 2:30 when Julio invited him to accept his second mouse of the day. He would not follow Julio in order to get it, but ate it when it was tossed to him.

At exactly 4:37P.M. he was in his roost in the eucalyptus--perhaps a guarantee that there will be no unduly violent meteorological happenings tonight. (52°). He was already half way up the adjoining tree at 4 P.M. and it took 37 minutes to make the rest of the journey (Clear, not quite calm, but not enough wind to make certain that the weather vane pointed in its direction).

Dec. 22nd. (Sunrise 7:22, sunset 4:54). Heavy clouds formed during the night.

At 9 A.M. Rhody still in his roost. (48). (Looks like rain. Neo not at home--no singing heard. Southeast wind).

9:45 A.M. Rhody has shifted slightly in his roost and is now back toward the wind, tail down.

10:00 Rain begins to fall lightly.

A Difference in Road-runner and Thrasher Psychology.

From the very beginning of my observations on these two kinds of birds I have noticed a striking difference in their behavior toward twigs, branches, straws, weed-stalks, and so forth, that interfere with their comfort or movements; but have always forgotten to make a note of it.

It is especially noticeable when one of them is standing near me, in what it considers an advantageous spot, to receive food from me, and does not want to move from that exact spot. Often one of the above mentioned impediments will interfere with its movements or, at times, prick the bird through its feathers.

In the case of the thrasher--all thrashers observed here--the bird becomes impatient at once and attempts to break off or remove and throw away, the offending object with apparent anger, becoming more violent in its action when the object continues to resist.

The road-runner, however, endures such a state of affairs indefinitely with the utmost placidity and will even tolerate a long succession of thrusts (caused by its own movements) from such an object about the head, face and neck, without any attempt to remove the cause or avoid it by changing position. In the end it may move aside slightly, but often it remains until some other stimulus influences it to go elsewhere. The road-runner is patient; the thrasher impatient.

In building nests both birds remove, or attempt to remove, interfering growth. In that they resemble each other; but again the thrasher "gets mad about it" and the roadrunner behaves philosophically.

Rhody goes into new house.

10:45. So far the rain has not been enough to make a surface film of moisture on leaves, but Rhody is peering out from the inside of his new house. The chilly wind can not reach him there.

More Road-runner and Thrasher Comparative Psychology.

In the instance of two untamed birds: Nova, for the thrashers, and Circe, Rhody's only know mate, for the roadrunners, we have an instance of behavior at the nest when incubating or brooding, that does not admit of generalization to any great extent on account of the few individuals concerned and the sparcity of observations. However, Nova resented my approach to the nest by scolding and pecking and pulling angrily at surrounding objects, maintaining this behavior even when she was a dozen yards or so away from the nest.

Circe would simply slip out of the nest quietly, disappear

in the thicket, move about from point to point, occasionally rattle-boo, but maintain enough self-possession to preen and rest. (Incidentally there was not seen any of the decoying behavior described by Dawson (Birds of California).

A Point of Behavior Common to the Thresher Neo, the Road-runner Rhody and the Plover "Beetle".

The crippled plover, christened "Beetle" by Dr. Reynolds, now recognizes me as source of food and will come and take worms from hand. Neo, as the notes show, comes to me for worms; but he has not progressed so far. Numerous instances have been cited of Rhody's beginning to look for imaginary worms on seeing me and even of his exhibiting the "salivary reflex", supposedly. Neo, on being called from his retreat, often pecks at invisible objects as he approaches me. Yesterday Beetle did the same. In both cases the bird does (or did) this immediately following an extended period during which it had not sought for food.

These notes have shown that Rhody, Archie and Terry his two offspring, have passed by and even walked on meat for hours without considering eating it, only to pick it up and eat it on having their attention drawn to it by me.

Beetle, yesterday, had refused to eat some short sections of angle worms placed near his principal standing place, although he had looked at them more than once. When I entered the cage and aproached him and sat down, he came toward me at once, but paused first to pick up and eat every one of the worm fragments before continuing onward to get meal worms from me.

11:30 A.M. So far the rain is only a threat. At this time Julio "handed" Rhody, in his new house, a mouse on the end of a pole, and it was gratefully accepted. R had refused to come down and get it.

1:15 P.M. Still in his house. Light, cold rain just started. Southerly wind, (50°).

2:05. Rhody still in his house. Not raining and, so far the amount fallen is only a trace.

Plover deviation from behavior just cited.

I now went to see Beetle, the plover. I entered the cage and sat down. When worms were shown in the palm of the hand (meal-worms) he came at once and took them. Heretofore it had been necessary to toss a worm or two on the ground in front of me as a preliminary.

I now placed some angle-worms on the ground before him. He would not touch them; but when I showed him one in the palm of my hand, he came and took it at once, but dropped it either accidentally or purposely, and stood there looking at my palm. He would not touch the other worms while I was there, though he might have if they had been cut into smaller pieces as he prefers.

Similar experience with other birds: Grosbeak, Oriole, Goldfinch.

Somewhere in these notes , I believe, I have stated it as past experience that tamed wild-birds, in an outdoor aviary, notably a black-headed grosbeak, a Bullock oriole and several green-backed gold-finches, once their confidence was gained, would try any food offered them by hand, even though that kind of food would not be taken by them on their own initiative; further, that these birds would leave any food they were eating at the time and come to me to eat exactly the same food if offered in my hand. (Curiously, the oriole proved to be a great seed-eater--provided I cracked each seed for him individually: a slow process which annoyed him so much that he would peck me to make me hurry and look for tender places (webs between fingers) to pinch. As soon as the seed was slightly cracked he would endeavor to extract the kernel. The grosbeaks method to force me to hurry was to call in my ear, then pinch it until I handed him a seed. In this way he got a taste of blood and I hadto prevent him from chewing my ears thereafter).

At 3 P.M. Rhody had moved out of the house and was in his night roost on one of the supporting limbs.

nother test on the plover.

I now went into the plover cage and offered cut-up angle worms in my palm. He came at once, but refused to touch them, standing there looking first at them, then at me, finally moving away slowly.

Meat was now substituted with the same result. Meal-worms were now offered producing immediate response and acceptance. So his acceptance of me appears to be based upon expectation of meal-worms only. Nothing flattering about this.

Several visits to Rhody accounted for his continued presence in his roost and, as far as known, he did not leave the roost tree all day, and his total food consumption consisted of the one mouse.

Dec. 23rd. (Sunrise 7:22, sunset 4:55).

A little early thrasher song. The sun rose in a cloudless sky. The night was cold, but Rhody's judgment as to non-recurrence of rain and wind proved correct.

At 8:45 he was still in his roost. (42°, coldest this season)
Neo not in his covert. (No wind).

At 9:30 Rhody was sunning on his low eucalyptus branch. Apparently his appetite would not permit him to wait for a mouse, for he had already gone to the cage and eaten the meat. (His presence there evidenced by absence of the meat and presence of fresh droppings).

About 10:20 I came face to face with him as I was turning the corner at the entrance to go out and look him up. A momentary start and he waited for coming events. I turned back up the driveway followed by him closely until he began to make wide excursions off to the left and the right, rattle-booing and displaying wings and tail. About half-way to the tool-house he took to the air and sailed away from me over the fence to the street. For what reason I do not know unless it was to express exuberance of spirits, for he came right back again, running and, after a few more dashes from one side to the other, he was standing meekly by me at the tool-house for his mouse. After downing it he went to the top of the cage to sun and rest presumably, but activities of other birds and the sound of a circular saw off to the north required attention, which he gave by staring in the appropriate direction from different points of the roof. Once more he composed himself to rest, but now the cry of a Cooper hawk, which he was unable to locate, disturbed him and he shifted into the acacia at the east end of the cage where he would not be so conspicuous. At 2 P.M. he was still there, comfortable and unafraid.

Just before this session with Rhody, flickers and a thrasher were heard to the north. Three flickers and one thrasher were in a bare maple down on the north slope about 50 yards from the fence. Calling and making motions of my hand, as if to toss worms, brought the thrasher to the fence for meal worms.

About 11 o'clock fine thrasher full song was heard to the north east. I found the bird in the cork-elm about 200 yards from here. He continued his song as I listened from the sidewalk at about his level, but 30 feet from him. When, however, I called and made "worm signs" he dropped down and climbed the bank to me for his meal, although a neighbor's cocker spaniel was now fawning upon me.

"Both" of these birds were undoubtedly Neo, responding to me out of my familiar environment. When Neo went back to the tree to sing again, it aroused the thrasher in the garden of the house on

Estates Drive: presumably the same bird with which Neo fought, as described in these notes. I now moved to a point about 100 feet from Neo and perhaps 75 yards from the other (invisible) bird and listened. The two songs were entirely different in general. I was probably listening to two birds announcing and prepared to defend territory claimed by each, and I suppose each was close to the marches of his domain.

When I walked back toward Neo he dropped down and approached without invitation. At no time during this period was any other thrasher seen near him, and there was no thrasher "talk" by him.

Rhody's appetite improves.

2:35 P.M. After writing the above note I went out to see what Rhody was doing. He had just come down from the tree and was in receptive mood, joining me quickly at the tool-house for his second mouse of the day. His appetite is improving!

I now had to leave the birds for a short time. On my passing Rhody's old roost tree, on returning at 3:35, I found him already tucked away in his house, having decided, I suppose, that the roost in the eucalyptus was undesirable this night. In this, I believe his judgment sound, as tonight seems destined to be the coldest one since last winter. (48°).

In the meantime Neo had returned from the north and was at his station on the south bank, where Julio gave him two centipedes. (About 3:30). At 4 P.M. I found him still there and in endeavoring to reach me through the triangular mesh of the fence, he got hung up by the neck in the sharp corner of a triangle and struggled frantically to free himself, dislodging feathers in the effort. He was at a disadvantage because he could not get his feet on the ground, and it looked as if he might break his neck; but he freed himself before I could reach him. I wondered if this episode would cause him to be afraid of me, but it did not, for he went at once to his regular passage-way through the fence and came to me for meal-worms.

Dec. 24th. (Sunrise 7:23, sunset 4:55).

If Rhody shifted to his old house on account of anticipated greater cold, he made the same mistake that I did, for while it was cold enough, clouds formed during the night preventing radiation to outer space, hence the expected extreme cold was not realized. (Temp. at 9 A.M. 48°). Some rain also fell during the night, so perhaps,

Rhody still abed at 12:30 P.M.

after all, he was wiser than I and made the change in view of impending rain! However that may be, he was still in his bunk at 12:30 P.M when Julio handed him a mouse on the end of a pole. Wise bird. It was then raining, as it had been for two or three hours.

Later observations made during the afternoon showed him still in his house. The evidence is that he did not leave it at all.

Neo was fed by Julio about 8 A.M., but was not seen after that.

Dec. 25th. (Sunrise 7:23, sunset 4:56).

Thrasher song in vatious directions: South, west and north east throughout the forenoon. The sun rose in a clear sky.

Rhody was up when looked for about 9:45. About noon he was seen at his old place on the west lot and came over the fence on invitation to take a mouse from hand. He seemed conserned about his surroundings and went back again into the lot. There has been a hen pheasant here for several days and it was present at the time. It

may be, as was suspected when the silver pheasant cock was here, that he objects to the presence of these birds. It was noticed that quail were scattered and one or two to be found in almost every clump of bushes, keeping very quite, but no hawk was seen. (Calm, 52°).

No observations were made during the afternoon by me, but Julio says Rhody wanted no more food and went to roost in his old house.

Dec. 26th. (Sunrise 7:24, sunset 4:56).

Sunny at this elevation but a blanket of fog lower down with occasional tenuous streamers reaching here.

Considerable early thrasher song and one thrasher eating at the suet "pudding" in the upper garden at 8 A.M. A half hour later a hawk was sitting on the ground by the station (20 feet from the corner of this room) and when I went out to "take measures" another, flew from an oak where it command a view of the station. I thought them to be male and female Coopers.

Rhody remained on the west lot most of the forenoon.

The pheasant was still here.

About 11:30 there was loud thrasher scripping and"queelicking" from the old oak. The pheasant was the cause and soon a half dozen birds,with the thrasher,flew out of the tree in alarm as the pheasant dashed about in the bushes somewhat in the manner of Rhody's circuses.

I called to the thrasher and it came to me for worms, but kept an anxious eye upon the neighboring shrubbery. It was Neo, who during the rest of the day,was frequently at his place on the bank and responded when offered worms. He was still wary and uncertain as to what might be lurking in the bushes.

Rhody finally decided to come home and ate all his meat. (Meat again). About noon he was pleased to come for a mouse. He chose the eucalyptus tree to sleep in instead of his old house, and went to roost at 3:40 P.M.: a reversion to early retirement.

I could see nothing in weather indications to influence his choice other than that prospects were for a calm night, fairly cold, but not extremely so, justifying sleeping in the open.

Dec. 27th. (Sunrise 7:24, sunset 4:57).

The day dawned fair, temperature at 8:30 A.M., 42°, blanket of fog just below, which rose to this elevation then dispersed about 9 A.M.

There was much wandering thrasher song, beginning about a half hour before sunrise, but Neo was not to be found at 9:30.

Rhody was in his roost then and still there at 10 A.M.

10:30. Still there. 11:00, no change. 11:40, no change. Fog tentacles reaching up here again.

At 12:10 Rhody had had enough of sitting in the cold fog (45°) and had shifted into his new house a foot or two from his roost. He does find it convenient occasionally.

Rhody shows great enthusiasm on discovering me.

At 12:50 (I had seen him in the house last at 12:10) he was no longer there, but as I stood looking up into the tree to make certain, he came tearing up the path at full speed, put on the brakes when he reached me, raised his crest and displayed his skin patch colors all the way to the back of his neck and watched keenly any move of mine that might suggest a march toward the tool house. When I did start he dashed off on side excursions with wings and tail spread, always coming back so as not to miss anything. He snatched the mouse from my fingers unceremoniously and made off at

once, running and flying to the glade. It was all over with the mouse when I got there and Rhody was now calm and phlegmatic after about the most enthusiastic reception he has given me.

Most of the afternoon until his bedtime was spent in an acacia on the bank near his roost. At 4:19 exactly he settled for the night in his eucalyptus tree roost. Clear, calm, 50°.

Dec. 28th. (Sunrise 7:24, sunset 4:58).

At 8:30 A.M. Rhody was still in his roost. (Cloudy, calm, 44°). Neo was nearby and was given worms.

9:45. Rhody still there. (North wind rising).
10:45. " " " (Wind subsiding; watery sunshine).
12:10. " " " (Calm.)
1:03 " " " "
1:45. Rhody had transferred to the ladder-eucalyptus at this time and was not at all enthusiastic about following me to the tool-house; but he did and got his mouse. Julio had placed a large, dead rat, which he caught last night, on the ground by the door. Rhody patently avoided it; but in running off with the mouse, had forgotten about it, almost ran over it, but shied off like a horse on seeing it.

He started his climb to his roost in the eucalyptus at 3:52 P.M. At 4:36 he was about to make his last leap to the roost, when he paused and craned his neck to look intently at something low in the west. I could see nothing (perhaps on account of the trees) but heard in the distance the peculiar kek-kek-kek'-kek-kek-kek-kek'of a Cooper hawk. Rhody now retreated into better concealment in the tree and waited there ten minutes before renewing his climb. He studied his surroundings carefully and at 4:50 was in his roost. Here is the first example of his showing fear of a hawk in the distance. (Partly cloudy, light breeze from N.E., 49°).

Dec. 29th. (Sunrise 7:24, sunset 4:59).

I had thought it probable that Rhody's choice of roost for the night would prove unfortunate; but again he was justified by the weather conditions that followed.

At 9:30 A.M. he was already down and came to look at Neo and me. He wanted no food at this time, but at 10:20 was ready for his mouse. (51°, sunny, N.E. wind).

I am anticipating that he will soon shows signs of awakening mating instincts for the coming season. It was on January 3rd, this year, that I first heard his coo-song of the cycle and, on the same day, the first clapping of his wings over his back. It was recorded at the time, also, that he was beginning to wander from his loafing place which, at that time, was the west lot.

Recently he has occasionally tugged at the cords controlling the awnings of the cage. This morning he pulled a twig out of the bank and "killed" it.

Since the fading of his last mating cycle he has been indifferent toward the mirror, as far as any pronounced activity is concerned, but he has never lost his awareness of it and at times seems to go to it for the deliberate purpose of observing any"activities" on its part. He will look at himself placidly and perhaps touch the glass with his bill a few times; but there has been no excitement, and no presentation of objects (mice, twigs) before it. I am expecting renewed interest in the mirror to accompany other signs of his sexual awakening.

Weather Conditions to Date.

On the whole, except for the few days around the 10th. of November (when there were torrential rains and winds of gale force) there have been few departures from normal during the past month or two. At present the rainfall on this side of the bay is about 25% in excess of normal (about 3 times that of last year). The weather has been, on the whole, mild. The absolute minimum temperature in the upper garden, so far, during this period, has been 36° and there has been no frost; but there has been frost at lower and higher altitudes, but not severe.

Wild currants, gooseberries, elderberries are coming into new leaf. The alders and the hazels have their catkins out and the manzanita variety having sessile leaves (Arctostaphylos Andersonii) and the Silk Tassel tree (Garrya elliptica) are in full bloom at elevations of 1000 to 1500 feet. This is not exceptional for these wild plants at this time of the year, but normal.

After having his mouse Rhody adjourned to the south-facing bank by the orchard to lie in the sun-spotted shade. Here he remained until a little after 2 P.M. until movements of mine suggested mouse to him and he followed to the tool-house, only to dash off in one of his circuses, finally returning to me for his mouse after one s sonorous rattle-boo. He again returned to the bank and was still there at 4 P.M. His roosting time was not noted, but he was in his roost in the eucalyptus at 5 P.M. (50°).

December 30th. (Sunrise 7:25, sunset 4:59).

Much thrasher song in the early morning, wandering from place to place.

At 8 A.M. Rhody was still in his roost. (49°, calm, partly cloudy). Julio had fed Neo before this at his regular place, but Neo was no longer there at 8 A.M.

An Hour with the Thrashers.

About 9 A.M. two thrashers were seen in a small, bare tree 50 or 60 yards away down on the slope to the north; one of them singing a confused sort of warbling song. In a few minutes they disappeared and full song was heard to the north east and a bird was seen in the cork-oak between the Nichols and the Reiter houses: the same tree where the "fight" of the other day originated. I went over there and stood 30 feet from the tree; the song continued, but there were no signs of the other bird. During a lull in the song the thrasher in the tree turned his attention to me and I offered worms, which it came and got. It was Neo, as suspected from the [illegible] first, the identification confirmed by the stub of the broken tail feather. He went back to the tree and continued the song. In about 10 minutes there was response far to the north east, but Neo, whose back was turned in that direction gave no indication of having heard it. The singer gradually approached and took up station in the back garden of the house on Estates Drive: the territory already indicated as being owned by a thrasher. This bird now began continuous full-song and I now stood between two singing thrashers about 60 or 70 yards apart, listening intently to both songs and watching both birds, as the newcomer was now in sight. With the usual allowance for human fallibility: the songs were made up of entirely different musical phrases, both musical and in "words". Both were much varied and I was unable to recognize any of Brownie's stock phrases in either. However, Neo approached one of them closely with a tor-kit-a (a as in hay) and used some flicker calls. The other had several phrases that were familiar, but not from thrashers. One of them a succession of short, clear whistled notes descending in pitch and uttered rapidly .

Another was somewhat like Brownie's whistled "calling the dog."

For a long time Neo kept his back turned toward the second bird and continued his song. Occasional both songs tended toward the conversational type as if in recognition of the others presence. The newcomer finally sailed down toward Neo's tree but, when within 40 feet of it, swerved to the right and disappeared behind the Reiter house to the north. Neo paid no attention and continued his song. In about 15 minutes the other bird had returned to his back-garden and renewed song. He worked his way to a point in the garden about 50 yards or less from Neo, who now faced in his direction. The two territories have a natural (or logical) line of demarkation between them, consisting of a terraced street in two levels separated by a parking strip. At almost precisely 10 o'clock, both birds ceased singing and Neo now began to show interest in me, so I filled him up with worms again. At times he dug in front of me and sang his soft digging song. Once also, he perched ten feet from me and sang sub-song. I now left.

Rhody was now down from his roost, when I returned here, but wanted nothing from me.

At 11:50 (Calm, hazy, 56°) I looked for Rhody in all of his known resorts within the property lines without success until 11:45, when apparently becoming impatient at my ineptitude, he placed himself practically under my nose with impertinent gestures of head and tail. Where he came from I do not know. We now went to the tool-house where he essayed one of his pleading whines when I delayed giving him the mouse, but he must either have been out of practice or else something must have stuck in his throat, for the best he could do in spite of wide-open mouth, was to emit a sound of about the same intensity as that produced by a mosquito. (This is a literal fact). I do not now recall when last he addressed me thus, and it may be that this whine is confined to the period of his mating cycle, and this instance is an indication of its beginning. However, past notes should show.

He spent all the rest of the day up to bedtime on the bank by the orchard and in the acacia by the eucalyptus roost tree. At 4:47 he made his last move to his roost in that tree. (Calm, clear, 53°).

Dec. 31st. (Sunrise 7:25, sunset 5:00).

At 9 A.M. Rhody had moved into his house in the eucalyptus. (Partlyycloudy, calm, 46°). There was no apparent reason why he should have made the change.

Neo had been fed at his old place somewhat earlier by Julio. No early thrasher song was heard.

3:15 P.M. Neo has remained in the bushes on the south bank ever since he was first fed. So far it has been a very quiet day for him. A large part of the time he has sat in one place in the honeysuckle, singing softly to himself, preening or simply resting. No other thrasher has been with him.

Rhody came down from the house at 10 o'clock, but wanted no mouse until 11, retiring almost at once to the acacia roost he prefers at present, and is still there, apparently not having moved from the limb which he now occupies for approximately 4 hours. (Dull, cloudy, calm, 50°).

Rhody arrived at his roost in the eucalyptus at 4:36 P.M. Hawks had been in the garden a few minutes before and I had been trying to get a shot at one of them just outside this window . There are now so many houses within range that I have to forego many easy opportunities to shoot Coopers and Sharpshins.